

AGRICULTURE, FOOD & NATURAL RESOURCES CAREER CLUSTER DESIGN

Agriculture Science Pathway – CIP Code 01.9999

Approved Pathway:

- 1) Includes minimum of three secondary-level credits.
- 2) Includes a work-based element.
- 3) Consists of a sequence: Introductory-level, Technical-level, and Application-level courses.
- 4) Supporting documentation include Articulation Agreement(s) and a Program of Study.
- 5) Technical-level and Application-level courses receive .5 state-weighted funding in an approved CTE pathway.

Concentrator Requirement

For a student to be a concentrator, at least 2 of 3 required secondary level credits taken must be a combination of technical and application levels.

INTRODUCTORY LEVEL

Exploratory Agriculture	68001	1 credit
Intro to Agriculture or Intro to Ag Science	18001	1 credit

TECHNICAL LEVEL

Agriscience Ag.	18002	1 credit		
Food Science	18305	1 credit	Food Science	22203 1 credit
Animal Science ✓	18101	1 credit	Horticulture or Horticulture I	18052 1 credit
Prin. of Ag Science-Animal	18108	1 credit	✓ Prin. of Ag Science-Plant	18060 1 credit
Equine Science	18104	1 credit	Plant & Soil Science ✓	18058 1 credit
Plant & Animal Science	18301	1 credit	Biotechnology in Agriculture	18308 1 credit
Energy Resources in Ag	18507	.5 credit	* Accounting	12104 1 credit

APPLICATION LEVEL

Food Science II	18317	1 credit	Small Animal Care	18102 1 credit
Ag Leadership & Comm.	18203	1 credit	* Agribusiness	18201 1 credit
Research in Agri.	18206	1 credit	Adv. Plant & Animal Science	18302 1 credit
Internship	18048	1 credit	Advanced Internship Animal	18049 1 credit
Supervised Ag Exp.	18050	1 credit	Health/Vet Science	18105 1 credit
Adv. Animal Science or Animal Science II	18103	1 credit		
Environmental Science & Natural Resources	18504	1 credit		
Environmental Resources & Wildlife Science	18501	1 credit		

*Only one of these two courses may be offered in the Pathway
 ✓Course is eligible for Regents Qualified Admissions – Natural Science

ALL ONE CREDIT COURSES MAY BE TAUGHT AS TWO .5 CREDIT COURSES.

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Ag. Explorations - 68001

Kansas Agricultural Education

Hours Completed _____ Competencies Completed ____/104
Verification Signatures:

Student: _____ Date: _____

Instructor: _____ Date: _____

Name: _____

Instructor: _____ School Year: _____

Key to Integrated Competencies

(CD)- Career Development

(L)- Leadership

(E) - Experienced Based

(LK) - LifeKnowledge Lessons

(LA) – Language Arts

(M) - Math

(S) – Science

(SS) – Social Science

Circle to indicate level of competency achieved:

3 - Skilled-Works Independently

2 Limited skill-Needs assistance

1 -Skill undeveloped-but received instruction

0 -No exposure

Agriculture In Our Society

- 3 2 1 0 1. Define Agriculture (E,LA)
- 3 2 1 0 2. Identify the major sectors of the agriculture industry. (7) (E,LA)
- 3 2 1 0 3. Describe the history of Agriculture. (E,LA)
- 3 2 1 0 4. Graph & discuss the change in world population over the last 100 years and its impact on land, medicine, food production and supply, and agriculture technology. (M,E,LA)
- 3 2 1 0 5. Describe the size, number, and what is grown on farms in Kansas and your home county. (M,E)
- 3 2 1 0 6. Describe the importance of American agriculture in world food production. (M,E,LA)

Opportunities in Agricultural Education & FFA

- 3 2 1 0 1. Define the purpose of FFA. (LA,E) (LK MS 63)
- 3 2 1 0 2. Draw the three circle model of agriculture education and label the parts. (LA,C) (LK MS 11 & HS 111)
- 3 2 1 0 3. Describe how the FFA evolved. (LK MS 62 & 63) (E,LA)
- 3 2 1 0 4. Describe how the FFA is organized on local state and national levels. (LK MS 65) (E,LA)
- 3 2 1 0 5. Identify the National FFA and Agriculture Education Mission statements. (LA)
- 3 2 1 0 6. List 5 opportunities in FFA (LK MS 63). (E,LA,L)
- 3 2 1 0 7. Recite the FFA Motto. (LA)

- 3 2 1 0 8. List the items of official dress required for your gender & the guidelines to abide by when wearing the jacket. (E,LA,L)
- 3 2 1 0 9. List and describe the symbols in the FFA emblem. (E,LA,L)
- 3 2 1 0 10. Identify the colors of the FFA. (E, LA)
- 3 2 1 0 11. List the degrees available in FFA. (E, LA,L)
- 3 2 1 0 12. Recite the FFA Creed. (E, LA,L) (LK HS 10)

Careers in Agriculture

- 3 2 1 0 1. Define profession, career and job. (LK MS 27) (CD)
- 3 2 1 0 2. Research agriculture career opportunities. (LK MS 28) (CD)
- 3 2 1 0 3. Identify an example of a career in each sector. (LK MS 67) (CD)
- 3 2 1 0 4. Identify important skills for all careers. (LK MS 30)
- 3 2 1 0 5. Identify career interests and preferences (LK MS 29) (CD)
- 3 2 1 0 6. Create a career development plan.(CD)
- 3 2 1 0 7. Define Parliamentary Procedure. (C,E)
- 3 2 1 0 8. Demonstrate how to present a main motion. (C,E)

Leadership and LifeKnowledge

- 3 2 1 0 1. Define Leadership (LK MS 1)(LA,L)
- 3 2 1 0 2. Define Personal Growth (LK MS 2) (LA,E,L)
- 3 2 1 0 3. Define Career Success (LK MS 3) (LA,CD,L)

Agriculture Safety

- 1. Describe the safety hazards associated with agriculture in the following areas.
 - 3 2 1 0 a. Farm Shop (LA,E)
 - 3 2 1 0 b. Animal (LA,E)
 - 3 2 1 0 c. Machinery and equipment (LA,E)
 - 3 2 1 0 d. Chemicals (LA,E,S)
 - 3 2 1 0 e. Stress and fatigue (LA,E)
- 3 2 1 0 2. Describe the proper attire for working in and around agriculture (LA,E)
- 3 2 1 0 3. Identify a Slow Moving Vehicle sign. (LA,E)

Record Keeping & SAE

- 3 2 1 0 1. Define income & expense. (M, LA,E)
- 3 2 1 0 2. Demonstrate basic record keeping skills (LK MS 69) (M,E)
- 3 2 1 0 3. Develop and set a goal (LK MS 14 & 15) (C,E)
- 3 2 1 0 4. Define SAE (LK MS 68) (CD, LA,E)
- 3 2 1 0 5. Describe the different types of SAEs (exploratory, research, entrepreneurship, placement) (LA,E)

Agribusiness Systems

- 3 2 1 0 1. Define and give examples of agribusinesses. (M, LA,E)
- 3 2 1 0 2. Define the words import and export. (E, LA)
- 3 2 1 0 3. Explain the relationship between producers and agribusinesses. (M, LA,E,CD)

- 3 2 1 0 4. Discuss the three segments of agribusinesses including production agriculture, agriculture input suppliers and agriculture marketing and processing. (M, LA,E)
- 3 2 1 0 5. Compare the price a producer receives to the price a consumer pays and discuss what other costs are involved in production. (M, LA)
- 3 2 1 0 6. Define management. (M, LA,E)
- 3 2 1 0 7. Identify 5 agribusinesses and their purpose in the community. (M LA)

Plant Systems

- 3 2 1 0 1. Define agronomy. (LA,E)
- 3 2 1 0 2. List the top 5 agronomic crops grown in Kansas. (LA,E)
- 3 2 1 0 3. List a product made from each of those crops. (LA,E)
- 3 2 1 0 4. Identify 3 pieces of machinery used in crop production. (LA,E)
- 3 2 1 0 5. Describe how agronomic crops are used for food, textiles, feed & energy. (LA,E)
- 3 2 1 0 6. Define Horticulture. (LA,E,S)
- 3 2 1 0 7. Identify five horticultural crops. (LA,E)
- 3 2 1 0 8. Describe how to care and maintain a lawn or garden. (S,E)

Animal Systems

- 3 2 1 0 1. Describe the basic needs of all animals. (S,E, LA)
- 3 2 1 0 2. List five examples of large animals. (S,E, LA)
- 3 2 1 0 3. Define & list examples of animal byproducts. (LA,E)
- 3 2 1 0 4. List five examples of small animals. (S,E, LA)
- 3 2 1 0 5. Estimate the cost for the care of a pet. (M,E, LA)
- 3 2 1 0 6. Research the care and handling for an animal of your choice. (S,E, LA)

Power Structural and Technical Systems

- 3 2 1 0 1. Describe the components of power structural and technical

systems including (electrical, carpentry, plumbing, welding, concrete, agriculture power, surveying, gps) (LA,E)

- 3 2 1 0 2. Abide by the safety guidelines. (LA,E)
- 3 2 1 0 3. Identify 10 common hand tools. (LA,E)
- 3 2 1 0 4. Identify and describe the uses for 5 power tools. (LA,E)
- 3 2 1 0 5. Demonstrate proper measuring skills using hand tools. (M,E, LA)

Natural Resource Systems

- 3 2 1 0 1. Define and list examples of Natural Resources. (S,E, LA)
- 3 2 1 0 2. Differentiate between renewable and non renewable resources. (S,E, LA)
- 3 2 1 0 3. Describe the habitat of a native Kansas wildlife species. (S,E, LA)
- 3 2 1 0 4. Define soil. (S,E, LA)
- 3 2 1 0 5. Describe the forestry industry in Kansas. (S,E, LA)

Environmental Systems

- 3 2 1 0 1. List causes of erosion to soil. (LA,E)
- 3 2 1 0 2. List important soil and water conservation practices. (M, LA,E)
- 3 2 1 0 3. Discuss major threats to water quality. (S,LA,E)
- 3 2 1 0 4. Describe common threats to air quality. (S,LA,E)

Food Products and Processing

- 3 2 1 0 1. List the steps food must go through to get from the producer to the consumer. (S,LA,E)
- 3 2 1 0 2. Explain how food can become unsafe to eat. (S,M,LA,E)
- 3 2 1 0 3. Analyze and understand a food label. (S,E,LA)
- 3 2 1 0 4. Describe the need for processing facilities for agriculture products. (LA)
- 3 2 1 0 5. List new uses for existing food products. (ex: soy milk) (S,E,LA)
- 3 2 1 0 6. Evaluate meat and produce for quality. (S,M,LA,E)

- 3 2 1 0 7. Describe safe food handling techniques. (S,LA,E)

Agricultural Issues

- 3 2 1 0 1. Define agricultural issues. (LA,E)
- 3 2 1 0 2. Describe how technology is used in agriculture. (S,M,LA,E)
- 3 2 1 0 3. Identify and describe a technological advancement that has happened in the last 5 years. (S,M,LA,E)
- 3 2 1 0 4. Research a current agriculture issue. (S,LA,E)

Wok Place Skills

Listening Skills

1. Follows oral instructions:
 - 3 2 1 0 a. Listen for and identify key words.
 - 3 2 1 0 b. Listen for words that identify a procedure.
 - 3 2 1 0 c. Listen for steps or actions to be performed.
 - 3 2 1 0 d. Listen for clues regarding the order or sequence in which a task is performed.
- 3 2 1 0 2. Distinguish fact, opinion, and inference in oral communication.
- 3 2 1 0 3. Interpret nonverbal cues (eye contact, posture, gestures).
- 3 2 1 0 4. Analyze a speaker's point of view.
- 3 2 1 0 5. Draw conclusions or make generalizations from another's oral communication.
- 3 2 1 0 6. Restate or paraphrase a conversation to confirm what was said.
- 3 2 1 0 7. Reduce barriers (or interference) that may impede effective listening.

Decision Making/Problem Solving

1. Describe the factors that impact on decision making:
 - 3 2 1 0 a. Needs and wants
 - 3 2 1 0 b. Values
 - 3 2 1 0 c. Goals
 - 3 2 1 0 d. Standards
- 3 2 1 0 2. Distinguish between types of decisions: economic and/or technical.
- 3 2 1 0 3. Apply the steps In interpreting a problem, coming up with a plan and then a result.

Teamwork

- 3 2 1 0 1. Participate in team activities, and complete team tasks.
- 3 2 1 0 2. Clarify statements, receive and give information, propose alternative plans and come up with a workable solution.

Introduction to Agriculture OR Introduction to Agriscience - 18001

Kansas Agriculture Education

Hours Completed _____ Competencies Completed _____/125
Verification Signatures:

Student: _____ Date: _____

Instructor: _____ Date: _____

Name: _____

Instructor: _____ School Year: _____

Key to Integrated Competencies

(CD)- Career Development

(L)- Leadership

(E) - Experienced Based

(LK) - LifeKnowledge Lessons

(LA) – Language Arts

(M) - Math

(S) – Science

(SS) – Social Science

Circle to indicate level of competency achieved:

3 - Skilled-Works Independently **2** Limited skill-Needs assistance **1** -Skill undeveloped-but received instruction **0** -No exposure

018. Agriscience in Our World

- 3 2 1 0 1. Define and relate agriscience to agriculture, agribusiness, and renewable natural resources. (LA)
- 3 2 1 0 2. Connect biology, chemistry, and biochemistry to agriscience (S)
- 3 2 1 0 3. Analyze how the world population affects today's agriculture industry. (SS)
- 3 2 1 0 4. Identify significant historical developments in agriscience. (SS)
- 3 2 1 0 5. Examine important research achievements in agriscience and future research implications. (S)
- 3 2 1 0 6. Compare and contrast the methods of agriculture used in the local, county, state, nation, and world. (SS, LA)
- 3 2 1 0 7. Describe the importance of agriculture products in everyday life. (E, SS)

019. Opportunities in the Agriculture Education & FFA

- 3 2 1 0 1. Distinguish between and describe the three parts of the agricultural education model and how they work together. (LK HS 114) (LA)
- 3 2 1 0 2. Identify different areas and describe the importance of agriculture education and the agriculture education mission statement. (L, LA) (LK HS 110)
- 3 2 1 0 3. Create a timeline of important events in FFA history. (LA) (LK HS 109)
- 3 2 1 0 4. Identify and describe the FFA mission

statement. (L, LA) (LK HS 110)

- 3 2 1 0 5. Recite and understand the FFA Creed. (E, LA) (LK HS 110)
- 3 2 1 0 6. Relate the FFA motto to daily life. (L, E) (LK HS 110)
- 3 2 1 0 7. List the requirements for FFA degrees. (L, E) (LK MS 70)
- 3 2 1 0 8. List the items of official dress required for your gender & the guidelines to abide by when wearing the jacket. (L, E) (LK HS 115)
- 3 2 1 0 9. List and describe the symbols of the FFA emblem. (L) (LK HS 111)
- 3 2 1 0 10. Identify the colors of the FFA. (L) (LK MS 65)
- 3 2 1 0 11. Research 3-5 potential Career Development Events. (CD)

020. Careers in Agriculture

- 3 2 1 0 1. List the career pathways for agriculture, food and natural resources (LK.HS.31). (CD)
- 3 2 1 0 2. Research a potential agriculture career based on your interests. (CD)
- 3 2 1 0 3. Develop a strategy to advance in that career (LK.HS.40). (CD, L)

021. Leadership and LifeKnowledge

- 3 2 1 0 1. Identify five characteristics of leadership (LK HS 1). (L)
- 3 2 1 0 2. Define the term "leadership" (LK.HS.1). (L)
- 3 2 1 0 3. Identify available leadership

- opportunities (LK.HS.1) (L)
- 3 2 1 0 4. Differentiate between a group and a team (LK.HS.65). (L)
- 3 2 1 0 5. Define teamwork and identify six benefits to working in teams (LK.HS.65). (L)
- 3 2 1 0 6. Understand and create personal goals using S.M.A.R.T. goals. (L, LA) (LK HS 45)
- 3 2 1 0 7. Describe the purpose and benefits of parliamentary procedure. (L, LA) (LK HS 81 & AHS 47)
- 3 2 1 0 8. Demonstrate five parliamentary procedure motions. (L, LA)

022. Public Speaking

- 3 2 1 0 1. Explain the relationship between communication and leadership. (L, LA)
- 3 2 1 0 2. List reasons why students should learn public speaking. (L, LA)
- 3 2 1 0 3. Create an outline and manuscript for an agricultural or leadership speech. (LA)
- 3 2 1 0 4. Demonstrate basic principles of speaking. (LA, L) (LK HS 90 & 91)

023. Supervised Agricultural Experience/Record Keeping

- 3 2 1 0 1. Explain the importance of record keeping (LK.MS.69). (LA)
- 3 2 1 0 2. Describe the different types of SAEs (exploratory, research, entrepreneurship and placement). (LK.HS.126) (CD)
- 3 2 1 0 3. Develop a plan for establishing an SAE

- program (LK.HS.127). (LA)
- 3 2 1 0 4. List proficiency award opportunities available through your SAE. (CD)
- 3 2 1 0 5. Record income and expenses into a record keeping format. (M)
- 3 2 1 0 6. Record current and non-current inventories. (M)
- 3 2 1 0 7. Compare and contrast entries for personal and SAE inventories. (M)

024. Agribusiness Systems

- 3 2 1 0 1. Compare the three segments of agribusiness. (CD)
- 3 2 1 0 2. Identify examples of each segment and its role in the community. (CD, L, SS)
- 3 2 1 0 3. Define entrepreneurship. (CD, LA)
- 3 2 1 0 4. Identify methods of marketing. (CD, LA)
- 3 2 1 0 5. Graph an agricultural example of supply and demand. (CD, SS)

025. Plant Systems

- 3 2 1 0 1. Draw and label the major parts of plants. (S)
- 3 2 1 0 2. Describe the major function of roots, stems, fruits and leaves. (S)
- 3 2 1 0 3. Draw and label the parts of a typical root, stem, flower, and leaf. (S)
- 3 2 1 0 4. Distinguish between sexual and asexual reproduction. (S)
- 3 2 1 0 5. Draw and label the reproductive parts of flowers and seeds. (S)
- 3 2 1 0 6. Compare the primary methods of asexual reproduction. (S)
- 3 2 1 0 7. Identify the top five crops in your county and state.
- 3 2 1 0 8. List the requirements for plant growth. (S)
- 3 2 1 0 9. Illustrate the importance of photosynthesis. (S)
- 3 2 1 0 10. Compare and contrast monocots and dicots. (S)
- 3 2 1 0 11. Identify machinery used in forage, crop, horticulture, and landscape businesses. (CD)

026. Animal Systems

- 3 2 1 0 1. Define domestic animals. (CD)

- 3 2 1 0 2. List the basic needs of animals. (CD, S)
- 3 2 1 0 3. Discuss the purposes of livestock and companion animals. (E, LA)
- 3 2 1 0 4. Identify the importance of vaccinations. (CD, S)
- 3 2 1 0 5. Describe characteristics of unhealthy animals. (CD)
- 3 2 1 0 6. Compare animal digestive systems. (S)
- 3 2 1 0 7. Identify and compare breeding management systems (reproduction). (S)
- 3 2 1 0 8. Identify animal gender terms. (S)
- 3 2 1 0 9. Identify major breeds of livestock. (CD)
- 3 2 1 0 10. Identify types of companion animals. (CD)
- 3 2 1 0 11. Describe trends in the animal science industry (such as the increase in poultry production). (CD)
- 3 2 1 0 12. Research an animal of your choice. (LA)

027. Power Structural and Technical Systems

- 3 2 1 0 1. Explain and abide by the safety guidelines. (CD)
- 3 2 1 0 2. Demonstrate safety practices in laboratory work. (E)
- 3 2 1 0 3. Locate safety equipment and emergency exits in the agricultural mechanics laboratory. (E)
- 3 2 1 0 4. Identify common hand and power tools. (CD)
- 3 2 1 0 5. Demonstrate proper safety techniques for using hand and power tools. (CD, E)
- 3 2 1 0 6. Identify the major parts of an arc welder. (CD)
- 3 2 1 0 7. Select the proper electrode to use when welding. (CD)
- 3 2 1 0 8. Demonstrate basic welding skills using the arc welder. (CD, E)
- 3 2 1 0 9. Distinguish between different welding practices. (CD, E)

028. Natural Resource Systems

- 3 2 1 0 1. List and describe major kinds of natural resources. (S)
- 3 2 1 0 2. Define sustainable resources. (S)
- 3 2 1 0 3. Compare and contrast conservation and preservation. (S)

- 3 2 1 0 4. List types of alternative fuels and explain why they are important. (S)
- 3 2 1 0 5. Illustrate and describe the food chain. (S)
- 3 2 1 0 6. Identify wildlife habitats for native Kansas animals. (S)
- 3 2 1 0 7. Research an endangered species. (S)
- 3 2 1 0 8. List the four components of soil. (S)
- 3 2 1 0 9. Identify the different soil classes. (S)
- 3 2 1 0 10. Compare sand, silt, and clay particles in a soil sample. (S)

029. Environmental Systems

- 3 2 1 0 1. Discuss major types and sources of pollution. (S)
- 3 2 1 0 2. Develop a plan of action to improve the environment. (LA)
- 3 2 1 0 3. Illustrate the water cycle. (S)
- 3 2 1 0 4. Discuss global warming and the greenhouse effect. (S)

030. Food Products and Processing Systems

- 3 2 1 0 1. List the steps food must go through to from the producer to the consumer. (S)
- 3 2 1 0 2. Identify food safety concerns. (S)
- 3 2 1 0 3. Identify government agencies involved in food production. (S,SS)
- 3 2 1 0 4. Discuss biotechnology advancements currently in the food industry. (S)
- 3 2 1 0 5. Discuss future developments predicted for the food industry. (E)

031. Agricultural Issues

- 3 2 1 0 1. Define agricultural industry terms (ex. Biotechnology, bio-terrorism, wind power). (CD, E)
- 3 2 1 0 2. Identify and describe a technological advancement that has happened in the last five years. (LA, L)
- 3 2 1 0 3. Research a current agriculture issue. (LA)
- 3 2 1 0 4. Discuss nutritional needs of humans and the food groups they need. (S)
- 3 2 1 0 5. Cite important relationships between land characteristics and water quality.

Work Place Skills

032. Listening Skills

- 1. Follows oral instructions:

- 3 2 1 0 a. Listen for and identify key words.L3A
- 3 2 1 0 b. Listen for words that identify a procedure.
- 3 2 1 0 c. Listen for steps or actions to be performed.
- 3 2 1 0 d. Listen for clues regarding the order or sequence in which a task is performed.
- 3 2 1 0 2. Distinguish fact, opinion, and inference in oral communication. L2D
- 3 2 1 0 3. Interpret nonverbal cues (eye contact, posture, gestures) L3A.
- 3 2 1 0 4. Analyze a speaker's point of view. L3B
- 3 2 1 0 5. Draw conclusions or make generalizations from another's oral communication. L2A
- 3 2 1 0 6. Restate or paraphrase a conversation to confirm what was said. L2A
- 3 2 1 0 7. Reduce barriers (or interference) that may impede effective listening L5B
- 3 2 1 0 8. Use interviewing techniques to gather information. L4D
- 3 2 1 0 9. Participate in group communication activities. L1C
- 3 2 1 0 10. Incorporate visual media into a presentation. L4E
- 3 2 1 0 11. Demonstrate concise impromptu speaking skills. L3B
- 3 2 1 0 12. Give oral directions.L3A
- 3 2 1 0 13. Demonstrate job interview skills. L10B

033. Resource Management

- 3 2 1 0 1. Locate information and select the materials, tools, and equipment needed to perform an activity or build a project.
- 3 2 1 0 2. Determine cost, time, and resources needed to complete a task within an industry or occupation.
- 3 2 1 0 3. Explain the relationship between setting goals and managing money.
- 3 2 1 0 4. Identify fixed and flexible expenses.
- 3 2 1 0 5. Identify planned and impulse buying.

034. Oral Communications

- 3 2 1 0 6. Organize notes and ideas for formal, semiformal, and informal presentations. L3A
- 3 2 1 0 7. Prepare and deliver a presentation appropriate to subject matter, purpose, and audience. L3B

Agriscience - 18002

Kansas Agricultural Education

Hours Completed _____ Competencies Completed ____/125

Verification Signatures:

Student: _____ Date: _____

Instructor: _____ Date: _____

Name: _____

Instructor: _____ School Year: _____

Key to Integrated Competencies

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(L)- Leadership

(E) - Experienced Based

(LK) - LifeKnowledge Lessons

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Agriscience in Our World

- 3 2 1 0 1. Define and relate agriscience to agriculture, agribusiness, and renewable natural resources. (LA)
- 3 2 1 0 2. Connect biology, chemistry, and biochemistry to agriscience (S)
- 3 2 1 0 3. Analyze how the world population affects today's agriculture industry. (SS)
- 3 2 1 0 4. Identify significant historical developments in agriscience. (SS)
- 3 2 1 0 5. Examine important research achievements in agriscience and future research implications. (S)
- 3 2 1 0 6. Compare and contrast the methods of agriculture used in the local, county, state, nation, and world. (SS, LA)
- 3 2 1 0 7. Describe the importance of agriculture products in everyday life. (E, SS)

Opportunities in the Agriculture Education & FFA

- 3 2 1 0 1. Distinguish between and describe the three parts of the agricultural education model and how they work together. (LK HS 114) (LA)
- 3 2 1 0 2. Identify different areas and describe the importance of agriculture education and the agriculture education mission statement. (L, LA) (LK HS 110)
- 3 2 1 0 3. Create a timeline of important events in FFA history. (LA) (LK HS 109)
- 3 2 1 0 4. Identify and describe the FFA mission statement. (L, LA) (LK HS 110)

- 3 2 1 0 5. Recite and understand the FFA Creed. (E, LA) (LK HS 110)
- 3 2 1 0 6. Relate the FFA motto to daily life. (L, E) (LK HS 110)
- 3 2 1 0 7. List the requirements for FFA degrees. (L, E) (LK MS 70)
- 3 2 1 0 8. List the items of official dress required for your gender & the guidelines to abide by when wearing the jacket. (L, E) (LK HS 115)
- 3 2 1 0 9. List and describe the symbols of the FFA emblem. (L) (LK HS 111)
- 3 2 1 0 10. Identify the colors of the FFA. (L) (LK MS 65)
- 3 2 1 0 11. Research 3-5 potential Career Development Events. (CD)

Careers in Agriculture

- 3 2 1 0 1. List the career pathways for agriculture, food and natural resources (LK.HS.31). (CD)
- 3 2 1 0 2. Research a potential agriculture career based on your interests. (CD)
- 3 2 1 0 3. Develop a strategy to advance in that career (LK.HS.40). (CD, L)

Leadership and LifeKnowledge

- 3 2 1 0 1. Identify five characteristics of leadership (LK HS 1). (L)
- 3 2 1 0 2. Define the term "leadership" (LK.HS.1). (L)
- 3 2 1 0 3. Identify available leadership opportunities (LK.HS.1) (L)

- 3 2 1 0 4. Differentiate between a group and a team (LK.HS.65). (L)
- 3 2 1 0 5. Define teamwork and identify six benefits to working in teams (LK.HS.65). (L)
- 3 2 1 0 6. Understand and create personal goals using S.M.A.R.T. goals. (L, LA) (LK HS 45)
- 3 2 1 0 7. Describe the purpose and benefits of parliamentary procedure. (L, LA) (LK HS 81 & AHS 47)
- 3 2 1 0 8. Demonstrate five parliamentary procedure motions. (L, LA)

Public Speaking

- 3 2 1 0 1. Explain the relationship between communication and leadership. (L, LA)
- 3 2 1 0 2. List reasons why students should learn public speaking. (L, LA)
- 3 2 1 0 3. Create an outline and manuscript for an agricultural or leadership speech. (LA)
- 3 2 1 0 4. Demonstrate basic principles of speaking. (LA, L) (LK HS 90 & 91)

Supervised Agricultural Experience/Record Keeping

- 3 2 1 0 1. Explain the importance of record keeping (LK.MS.69). (LA)
- 3 2 1 0 2. Describe the different types of SAEs (exploratory, research, entrepreneurship and placement). (LK.HS.126) (CD)
- 3 2 1 0 3. Develop a plan for establishing an SAE

- program (LK.HS.127). (LA)
- 3 2 1 0 4. List proficiency award opportunities available through your SAE. (CD)
- 3 2 1 0 5. Record income and expenses into a record keeping format. (M)
- 3 2 1 0 6. Record current and non-current inventories. (M)
- 3 2 1 0 7. Compare and contrast entries for personal and SAE inventories. (M)

Agribusiness Systems

- 3 2 1 0 1. Compare the three segments of agribusiness. (CD)
- 3 2 1 0 2. Identify examples of each segment and its role in the community. (CD, L, SS)
- 3 2 1 0 3. Define entrepreneurship. (CD, LA)
- 3 2 1 0 4. Identify methods of marketing. (CD, LA)
- 3 2 1 0 5. Graph an agricultural example of supply and demand. (CD, SS)

Plant Systems

- 3 2 1 0 1. Draw and label the major parts of plants. (S)
- 3 2 1 0 2. Describe the major function of roots, stems, fruits and leaves. (S)
- 3 2 1 0 3. Draw and label the parts of a typical root, stem, flower, and leaf. (S)
- 3 2 1 0 4. Distinguish between sexual and asexual reproduction. (S)
- 3 2 1 0 5. Draw and label the reproductive parts of flowers and seeds. (S)
- 3 2 1 0 6. Compare the primary methods of asexual reproduction. (S)
- 3 2 1 0 7. Identify the top five crops in your county and state.
- 3 2 1 0 8. List the requirements for plant growth. (S)
- 3 2 1 0 9. Illustrate the importance of photosynthesis. (S)
- 3 2 1 0 10. Compare and contrast monocots and dicots. (S)
- 3 2 1 0 11. Identify machinery used in forage, crop, horticulture, and landscape businesses. (CD)

Animal Systems

- 3 2 1 0 1. Define domestic animals. (CD)

- 3 2 1 0 2. List the basic needs of animals. (CD, S)
- 3 2 1 0 3. Discuss the purposes of livestock and companion animals. (E, LA)
- 3 2 1 0 4. Identify the importance of vaccinations. (CD, S)
- 3 2 1 0 5. Describe characteristics of unhealthy animals. (CD)
- 3 2 1 0 6. Compare animal digestive systems. (S)
- 3 2 1 0 7. Identify and compare breeding management systems (reproduction). (S)
- 3 2 1 0 8. Identify animal gender terms. (S)
- 3 2 1 0 9. Identify major breeds of livestock. (CD)
- 3 2 1 0 10. Identify types of companion animals. (CD)
- 3 2 1 0 11. Describe trends in the animal science industry (such as the increase in poultry production). (CD)
- 3 2 1 0 12. Research an animal of your choice. (LA)

Power Structural and Technical Systems

- 3 2 1 0 1. Explain and abide by the safety guidelines. (CD)
- 3 2 1 0 2. Demonstrate safety practices in laboratory work. (E)
- 3 2 1 0 3. Locate safety equipment and emergency exits in the agricultural mechanics laboratory. (E)
- 3 2 1 0 4. Identify common hand and power tools. (CD)
- 3 2 1 0 5. Demonstrate proper safety techniques for using hand and power tools. (CD, E)
- 3 2 1 0 6. Identify the major parts of an arc welder. (CD)
- 3 2 1 0 7. Select the proper electrode to use when welding. (CD)
- 3 2 1 0 8. Demonstrate basic welding skills using the arc welder. (CD, E)
- 3 2 1 0 9. Distinguish between different welding practices. (CD, E)

Natural Resource Systems

- 3 2 1 0 1. List and describe major kinds of natural resources. (S)
- 3 2 1 0 2. Define sustainable resources. (S)
- 3 2 1 0 3. Compare and contrast conservation and preservation. (S)

- 3 2 1 0 4. List types of alternative fuels and explain why they are important. (S)
- 3 2 1 0 5. Illustrate and describe the food chain. (S)
- 3 2 1 0 6. Identify wildlife habitats for native Kansas animals. (S)
- 3 2 1 0 7. Research an endangered species. (S)
- 3 2 1 0 8. List the four components of soil. (S)
- 3 2 1 0 9. Identify the different soil classes. (S)
- 3 2 1 0 10. Compare sand, silt, and clay particles in a soil sample. (S)

Environmental Systems

- 3 2 1 0 1. Discuss major types and sources of pollution. (S)
- 3 2 1 0 2. Develop a plan of action to improve the environment. (LA)
- 3 2 1 0 3. Illustrate the water cycle. (S)
- 3 2 1 0 4. Discuss global warming and the greenhouse effect. (S)

Food Products and Processing Systems

- 3 2 1 0 1. List the steps food must go through to from the producer to the consumer. (S)
- 3 2 1 0 2. Identify food safety concerns. (S)
- 3 2 1 0 3. Identify government agencies involved in food production. (S,SS)
- 3 2 1 0 4. Discuss biotechnology advancements currently in the food industry. (S)
- 3 2 1 0 5. Discuss future developments predicted for the food industry. (E)

Agricultural Issues

- 3 2 1 0 1. Define agricultural industry terms (ex. Biotechnology, bio-terrorism, wind power). (CD, E)
- 3 2 1 0 2. Identify and describe a technological advancement that has happened in the last five years. (LA, L)
- 3 2 1 0 3. Research a current agriculture issue. (LA)
- 3 2 1 0 4. Discuss nutritional needs of humans and the food groups they need. (S)
- 3 2 1 0 5. Cite important relationships between land characteristics and water quality.

Work Place Skills

Listening Skills

- 1. Follows oral instructions:

- 3 2 1 0 a. Listen for and identify key words.
- 3 2 1 0 b. Listen for words that identify a procedure.
- 3 2 1 0 c. Listen for steps or actions to be performed.
- 3 2 1 0 d. Listen for clues regarding the order or sequence in which a task is performed.
- 3 2 1 0 2. Distinguish fact, opinion, and inference in oral communication.
- 3 2 1 0 3. Interpret nonverbal cues (eye contact, posture, gestures).
- 3 2 1 0 4. Analyze a speaker's point of view.
- 3 2 1 0 5. Draw conclusions or make generalizations from another's oral communication.
- 3 2 1 0 6. Restate or paraphrase a conversation to confirm what was said.
- 3 2 1 0 7. Reduce barriers (or interference) that may impede effective listening.

Resource Management

- 3 2 1 0 1. Locate information and select the materials, tools, and equipment needed to perform an activity or build a project.
- 3 2 1 0 2. Determine cost, time, and resources needed to complete a task within an industry or occupation.
- 3 2 1 0 3. Explain the relationship between setting goals and managing money.
- 3 2 1 0 4. Identify fixed and flexible expenses.
- 3 2 1 0 5. Identify planned and impulse buying.

Oral Communications

- 3 2 1 0 6. Organize notes and ideas for formal, semiformal, and informal presentations.
- 3 2 1 0 7. Prepare and deliver a presentation appropriate to subject matter, purpose, and audience.
- 3 2 1 0 8. Use interviewing techniques to gather information.
- 3 2 1 0 9. Participate in group communication activities.

- 3 2 1 0 10. Incorporate visual media into a presentation.
- 3 2 1 0 11. Demonstrate concise impromptu speaking skills.
- 3 2 1 0 12. Give oral directions.
- 3 2 1 0 13. Demonstrate job interview skills.

Ag Food Science -18305

Kansas Agricultural Education

Hours Completed _____ Competencies Completed _____
 Verification Signatures:

Student: _____ Date: _____

Instructor: _____ Date: _____

Name:

_____ NRS _____

Key to Integrated Competencies

(CD)- Career Development

(L)- Leadership

(E) - Experienced Based

(LK) - LifeKnowledge Lessons

(LA) – Language Arts

(M) - Math

(S) – Science

(SS) – Social Science

Circle to indicate level of competency achieved:

3 - Skilled-Works Independently **2** Limited skill-Needs assistance

1 -Skill undeveloped-but received instruction

0 -No exposure

Changes & Trends FFP.01.01.

- 3 2 1 0 1. Discuss the history and describe and explain the components (e.g., processing, distribution, byproducts) of the food products and processing industry.
- 3 2 1 0 2. Identify and explain environmental and safety concerns about the food supply.
- 3 2 1 0 3. Discuss the issues of safety and environmental concerns about foods and food processing (e.g., Genetically Modified Organisms, microorganisms, contamination, irradiation).

Outreach & Relations FFP.01.02.

- 3 2 1 0 1. Explain the purposes of organizations that are part of or regulate the food products and processing industry.
- 3 2 1 0 2. Explain the importance and usage of industry standards in food products and processing.
- 3 2 1 0 3. Discuss the application of industry standards in the food products and processing industry.

Manage Operational Procedures FFP.02.01.

- 3 2 1 0 1. Explain the importance of developing and maintaining Sanitation Standard Operating Procedures (SSOP).
- 3 2 1 0 2. Explain the purpose of Good Manufacturing Practices (GMP).
- 3 2 1 0 3. Identify reasons for using a planned maintenance program to maintain equipment and facilities.

- 3 2 1 0 4. Develop a basic equipment and facility maintenance program.

Implement HACCP Procedures FFP.02.02

- 3 2 1 0 1. Describe contamination hazards (physical, chemical and biological) associated with food products and processing.
- 3 2 1 0 2. Identify the seven principles of HACCP.
- 3 2 1 0 3. Explain the implementation of the seven principles of HACCP.

Safety & Sanitation Procedures FFP.02.03.

- 3 2 1 0 1. Explain techniques and procedures for the safe handling of food products.
- 3 2 1 0 2. Describe the importance of performing quality-assurance tests on food products.
- 3 2 1 0 3. Evaluate food product handling procedures.
- 3 2 1 0 4. Perform quality-assurance tests on food products.
- 3 2 1 0 5. Describe the effects food-borne pathogens have on food products and humans.
- 3 2 1 0 6. Explain the importance of record keeping in a food products and processing system.
- 3 2 1 0 7. Discuss documentation procedures in a food products and processing system.

Demonstrate Worker Safety Procedures FFP.02.04

- 3 2 1 0 1. Explain safety standards that must be observed in facility design and equipment use.
- 3 2 1 0 2. Outline guidelines for personnel safety in the food products and processing industry.

Applying Principles of Science FFP.03.01

- 3 2 1 0 1. Discuss how research and industry developments lead to improvements in the food products and processing industry.
- 3 2 1 0 2. Explain the application of chemistry and physics to food science.
- 3 2 1 0 3. Explain the Food Guide Pyramid in the relation to essential nutrients for the human diet.
- 3 2 1 0 4. Discuss common food constituents (e.g., proteins, carbohydrates, fats, vitamins, minerals).
- 3 2 1 0 5. Identify common food additives (e.g., preservatives, antioxidants, buffers, stabilizers, colors, flavors).
- 3 2 1 0 6. Describe the purpose of common food additives.
- 3 2 1 0 7. Explain the importance of food labeling to the consumer.
- 3 2 1 0 8. Explain the required components of a food label.
- 3 2 1 0 9. Describe factors in planning and developing a new food product (e.g., regulation, creativity, and economics).

Quality Food Products FFP.04.01.

- 3 2 1 0 1. Identify quality and yield grades of food products.
- 3 2 1 0 2. Discuss factors that affect quality and yield grades of food products.

- 3 2 1 0 3. Select raw food products based on yield grades, quality grades and related selection criteria.
- 3 2 1 0 4. Identify and describe accepted animal treatment and harvesting techniques.
- 3 2 1 0 5. Describe the importance of pre-mortem and post-mortem inspections of animals for harvest.

Processed Food Products FPP.04.02.

- 3 2 1 0 1. Identify and describe foods derived from meat, egg, poultry, fish and dairy products.
- 3 2 1 0 2. Discuss desirable qualities of processed meat, egg, poultry, fish and dairy products.
- 3 2 1 0 3. Identify and describe products derived from fruits and vegetables.
- 3 2 1 0 4. Identify and describe products derived from grains, legumes and oilseeds.

Sale & Distribution FFP.04.030

- 3 2 1 0 1. Identify and explain common weights and measures used in the food products and processing industry.
- 3 2 1 0 2. Explain methods and materials for processing foods for sale as fresh-food products.
- 3 2 1 0 3. Identify methods of food preservation and give examples of foods preserved by each method.
- 3 2 1 0 4. Explain techniques for preparing ready-to-eat food products.
- 3 2 1 0 5. Explain materials and methods of food packaging and presentation.
- 3 2 1 0 6. Identify and explain storage conditions to preserve product quality.

Animal Science -18101

Kansas Agricultural Education

Hours Completed _____ Competencies Completed _____
 Verification Signatures:

Student: _____ Date: _____

Instructor: _____ Date: _____

Name: _____

Instructor: _____ School Year: _____

Key to Integrated Competencies

(CD)- Career Development

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(LA) – Language Arts

(M) - Math

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Animal Origin AS.01.01.

- 3 2 1 0 1. Identify the origin, significance, distribution and domestication of animal species.
- 3 2 1 0 2. Define major components of the animal industry.

Classify Animals AS.02.01.

- 3 2 1 0 1. Explain the importance of the binomial system of nomenclature.
- 3 2 1 0 2. Identify major animal species by common and scientific names.

Comparative Anatomy & Physiology AS.02.02.

- 3 2 1 0 1. Identify basic characteristics of animal cells, tissues, organs and body systems.
- 3 2 1 0 2. Diagram a typical animal cell and identify the organelles.
- 3 2 1 0 3. Describe the basic functions of animal cells in growth and reproduction.
- 3 2 1 0 4. Describe the properties, locations, functions and types of animal tissues.
- 3 2 1 0 5. Describe the properties, locations, functions and types of animal organs.
- 3 2 1 0 6. Describe the functions of the animal body systems and system components.

Selecting Animals AS.02.03.

- 3 2 1 0 1. Identify ways an animal's health can be affected by anatomical and physiological disorders.
- 3 2 1 0 2. Create a program to develop an animal to its highest potential performance.

Prevention & Treatment of Animals AS.03.01.

- 3 2 1 0 1. Explain methods of determining animal health and disorders.
- 3 2 1 0 2. Identify common diseases, parasites and physiological disorders that affect animals.
- 3 2 1 0 3. Explain characteristics of causative agents and vectors of diseases and disorders in animals.
- 3 2 1 0 4. Explain the clinical significance of common considerations in veterinary treatments, such as aseptic techniques.
- 3 2 1 0 5. Identify and describe zoonotic diseases.

Biosecurity AS.03.02.

- 3 2 1 0 1. Explain the importance of biosecurity to the animal industry.

Formulate Feed Rations AS.04.01.

- 3 2 1 0 1. Compare and contrast common types of feedstuffs and the roles they play in the diets of animals.
- 3 2 1 0 2. Explain the importance of a balanced ration for animals.

Feed Additives & Growth Promotants AS.04.02.

- 3 2 1 0 1. Explain the purpose and benefits of feed additives and growth promotants in animal production.

Male & Female Reproductive Systems AS.05.01.

- 3 2 1 0 1. Explain the male and female reproductive organs of the major animal species.

Breeding Readiness & Soundness AS.05.02.

- 3 2 1 0 1. Explain how age, size, life cycle, maturity level and health status affect the reproductive efficiency of male and female animals.
- 3 2 1 0 2. Discuss the importance of efficient and economic reproduction in animals.

Scientific Principles in Breeding AS.05.03

- 3 2 1 0 1. Explain genetic inheritance in agricultural animals.
- 3 2 1 0 2. Define natural and artificial breeding methods.
- 3 2 1 0 3. Explain the use of quantitative breeding values (e.g., EPDs) in the selection of genetically superior breeding stock.
- 3 2 1 0 4. Explain the advantages of major reproductive management practices, including estrous synchronization, superovulation, flushing and embryo transfer.
- 3 2 1 0 5. Discuss the uses and advantages and disadvantages of natural breeding and artificial insemination.

Safe Animal Handling AS.06.01.

- 3 2 1 0 1. Discuss the dangers involved in working with animals.
- 3 2 1 0 2. Explain the implications of animal welfare and animal rights for animal agriculture.

Animal Product Safety AS.06.02.

- 3 2 1 0 1. Identify animal production practices that could pose health risks or are considered to pose risks by some.
- 3 2 1 0 2. Describe how animal identification systems can track an animal's location, nutrition requirements, production progress and changes in health.

Design Animal Facilities AS.07.01.

- 3 2 1 0 1. Identify facilities needed to house and produce each animal species safely and efficiently.
- 3 2 1 0 2. Identify equipment and handling facilities used in modern animal production.

Government Regulations & Standards AS.07.02.

- 3 2 1 0 1. List the general standards (e.g., environmental, zoning, construction) that must be met in facilities for animal production.

Reducing Environment Effects AS.08.01.

- 3 2 1 0 1. Evaluate the effects of animal agriculture on the environment.

Environment Conditions on Animals AS.08.02.

- 3 2 1 0 1. Identify optimal environmental conditions for animals.

Prin of Animal Science

Kansas Agricultural Education

18108

Name: _____

Instructor: _____ School Year: _____

Hours Completed _____	Competencies Completed _____/83
Verification Signatures:	
Student: _____	Date: _____
Instructor: _____	Date: _____

Key to Integrated Competencies

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001. Animal Science Orientation

- 3 2 1 0 1. Research a production system for a particular species (LA)
- 3 2 1 0 2. Project future systems of production for food and specialty animals.
- 3 2 1 0 3. Compare past systems to present systems.
- 3 2 1 0 4. Discuss livestock systems by regional, local and worldwide production.(SS)
- 3 2 1 0 5. Compare salaries within a production system and across systems with regard to experience, education and training. (CD)
- 3 2 1 0 6. Determine various levels of education required for careers in animal science (CD)
- 3 2 1 0 7. Classify livestock species
- 3 2 1 0 8. Identify food and non-food uses of livestock.

002. Anatomy and Physiology

- 3 2 1 0 1. Identify components and functions of common domestic animal skeletal structures. (S)
- 3 2 1 0 2. Identify parts and functions of the genital-urinary system. (S)
- 3 2 1 0 3. Identify parts and functions of the circulatory system. (S)
- Identify parts and functions of the nervous systems.

- 3 2 1 0 4. Identify parts and functions of the respiratory system. (S)
- 3 2 1 0 5. Identify and explain functions of epithelial, connective, and muscular tissue. (S)
- 3 2 1 0 6. Identify the anatomy and physiology of various animal digestive systems and explain functions as affected by digestive components. (S)

002. Animal Health & Management

- 3 2 1 0 1. Demonstrate skills related to healthy livestock production including: vaccination, castration, heat detection, pregnancy checking, docking, clipping needle teeth, etc. (E)
- 3 2 1 0 2. Identify and demonstrate the proper use of livestock equipment and facilities. (E)
- 3 2 1 0 3. Describe hazards related to livestock production. (LA)
- 3 2 1 0 4. Take a field trip to a livestock producer or veterinarian to observe livestock handling procedures and practices. (E)
- 3 2 1 0 5. Investigate and describe animal behavior in response to internal and external stimuli changes. (LA)
- 3 2 1 0 6. Explain and identify the functions and parts of cells. (S)

004. Nutrition

- 3 2 1 0 1. Identify the six nutrients and explain the function of each. (S)

- 3 2 1 0 2. Interpret and understand a feed tag.
- 3 2 1 0 3. Identify common feed stuffs and classify them into their nutritional categories. (E)
- 3 2 1 0 4. Formulate balanced rations.(E) (LK HS 42)
- 3 2 1 0 5. Identify the advantages of various types of feed processing techniques and their importance to various species
- 3 2 1 0 6. Calculate cost of ration. (M)
- 3 2 1 0 7. Describe the nutritional impact of range and pasture management practices.

005. Genetics

- 3 2 1 0 1. Explain how genetics relates to improvement in efficient livestock production. (S)
- 3 2 1 0 2. Investigate and describe how DNA carries the genetic code. (S)
- 3 2 1 0 3. Describe how genes and chromosomes affect the genotype and phenotype of animals. (S)
- 3 2 1 0 4. Understand and explain mutations. (S)
- 3 2 1 0 5. Define heritability and discuss how genetics and environment influence the phenotype of animals. (S)

006. Livestock Marketing

- 3 2 1 0 1. List and differentiate between methods of marketing (auction alternatives, direct sale and terminal). (LA)
- 3 2 1 0 2. Identify marketing techniques and demonstrate proper calculation of

- marketing problems such as futures, hedging, options and contract sale. (M)
- 3 2 1 0 3. List price factors affecting quality and yield grade.
- 3 2 1 0 4. Describe economic value of livestock to USA and Kansas. (SS, LA)

007.Current Animal Ag Issues

- 3 2 1 0 1. Identify and discuss the major issues impacting the livestock industry.(LK AHS 40) (LA)
- 3 2 1 0 2. Discuss different livestock production systems and their effect on the community and environment (SS)
- 3 2 1 0 3. Select, research and debate an animal issue, i.e. cloning, waste management, animal rights, organic farming, global warming (LA) (LK AHS 40)

008.Reproduction

- 3 2 1 0 1. Describe management care to maximize reproductive efficiencies. (LA)
- 3 2 1 0 2. Define terminology required to study and apply reproductive management.(LA)
- 3 2 1 0 3. Identify reproductive maturity stages of animals.
- 3 2 1 0 4. Discuss the stages of embryo and fetal development in animals. (S)
- 3 2 1 0 5. Analyze the process and impact of reproductive technology techniques like Artificial Insemination and Embryo Transplant (S)

Animal Products

- 3 2 1 0 1. Outline humane slaughtering and processing procedures.
- 3 2 1 0 2. Explain safe handling of meat, poultry and dairy products.
- 3 2 1 0 3. Differentiate between various U.S.D.A. grades for various animal related products.
- 3 2 1 0 4. Identify livestock inspection procedures (S, E)
- 3 2 1 0 5. Identify wholesale and retail cuts of meat and poultry (E)

Fish & Wildlife

- 3 2 1 0 1. Understand the relationship between

ecology and agriculture (S)

- 3 2 1 0 2. Identify and manage wildlife resources
- 3 2 1 0 3. Explain problems related to endangered species (S)
- 3 2 1 0 4. Identify methods of aquaculture management and production.

011. Opportunities in the FFA

- 3 2 1 0 1. Research and present a 3-5 minute speech on an agricultural topic.(LK HS 90) (L, LA) L4E
- 3 2 1 0 2. Serve on a POA committee.(LK AHS 45) (L) L2B
- 3 2 1 0 3. Participate in a local chapter activity. (L) L6B
- 3 2 1 0 4. Demonstrate how to conduct an engaging chapter meeting. (LK AHS 47) (L)L9B
- 3 2 1 0 5. Identify and relate the benefits of FFA to his/her education and personal goals. (L)L10B

012. SAE

- 3 2 1 0 1. Maintain records on income and expense.(LK MS 69) (M, CD, E)
- 3 2 1 0 2. Complete a cash flow statement. (M, CD, E)
- 3 2 1 0 3. Complete year-end records.(M, CD, E)
- 3 2 1 0 4. Complete a SAE packet.(LK AHS 53)

Work Place Skills

013. Career Development

- 3 2 1 0 1. Compile a list of animal science career areas.(LK HS 31)L10B
- 3 2 1 0 2. Compose a letter of application and personal resume for a selected animal science career. (LA) (LK HS 37)L3A
- 3 2 1 0 3. Participate in mock interviews. (L, LA) (LK HS 38)L3B
- 3 2 1 0 4. Develop a career path and identify the opportunities in that path. (CD)L10B
- 3 2 1 0 5. Identify, investigate and target a career choice.(CD)L10B
- 3 2 1 0 6. Apply for acceptance to further education in that career choice.(CD) L10C
- 3 2 1 0 7. Apply for FFA awards upon graduation and post graduation. L3D

014. Resource Management

- 3 2 1 0 1. Locate information and select the materials, tools, and equipment needed to perform an activity or build a project.(CD)
 - 3 2 1 0 2. Determine cost, time, and resources needed to complete a task within an industry or occupation. (CD)
 - 3 2 1 0 3. Explain the relationship between setting goals and managing money. (CD)
 - 3 2 1 0 4. Identify fixed a flexible expenses. (CD)
 - 3 2 1 0 5. Identify planned and impulse buying.
- #### **015. Oral Communications**
- 3 2 1 0 1. Organize notes and ideas for formal, semiformal, and informal presentations.(L, LA)L3A
 - 3 2 1 0 2. Prepare and deliver a presentation appropriate to subject matter, purpose, and audience. (L, LA)L3A
 - 3 2 1 0 3. Use interviewing techniques to gather information. (L, LA, CD)L4D
 - 3 2 1 0 4. Participate in group communication activities.(L)L3B
 - 3 2 1 0 5. Incorporate visual media into a presentation. (L, LA) L4D
 - 3 2 1 0 6. Demonstrate concise impromptu speaking skills.(L)L4E
 - 3 2 1 0 7. Give oral directions.(L, LA)L3B
 - 3 2 1 0 8. Demonstrate job interview skills. (L, LA)L10A

Kansas Agriculture Education											
Name:		SS #:		Equine Science - 18104							
Department:		Instructor:		Enrollment Date		Completion Date		Hours Completed			
Rating Scale:	3 - Skilled - Works independently 2 - Limited Skill - Requires assistance to perform task 1 - Skill Underdeveloped - Received instruction but has not developed skill 0 - No Exposure - No instruction or training in this area			I certify that the student received training in the areas indicated:							
Directions:	Evaluate the student by checking the appropriate number to indicate the degree of competency reached. Rate each task to reflect employability readiness.										
Student Signature _____										/ /	
Instructor Signature _____										/ /	
Administrator Signature _____				/ /							
Key to Integrated Concepts: (A) Academic {AC-Communication/English, AM-Math, AS-Science} (CD) - Career Development (E) - Experience Based (L) - Leadership											
A. EQUINE ORIENTATION AND CAREER EXPLORATION				C. EQUINE NUTRITION				F. HORSE BREEDS AND SELECTION			
3 2 1 0 1 Identify career opportunities in equine industry (CD)				3 2 1 0 1 Define and describe food nutrients (AS)				3 2 1 0 1 Identify major breeds of horses			
3 2 1 0 2 Identify levels of education required (CD)				3 2 1 0 2 Formulate and balance rations (AM)				3 2 1 0 2 Label the anatomy of horses (AS)			
3 2 1 0 3 Research a specific equine topic (CD, AC)				3 2 1 0 3 Classify feedstuffs according to their nutrient content (AS)				3 2 1 0 3 List factors to consider in selecting horses			
3 2 1 0 4 Present an oral report on an equine topic (AC, CD)				3 2 1 0 4 Identify nutritional deficiencies (AS)				3 2 1 0 4 List desirable characteristics of a mare (AS)			
3 2 1 0 5 Identify local SAE opportunities (CD,E)				3 2 1 0 5 Determine a least cost ration based on local prices (AM)				3 2 1 0 5 List desirable characteristics of a stud (AS)			
3 2 1 0 6 Make plans for implementing an SAE (CD, E)				D. DISEASES AND PARASITES - EQUINE HEALTH				3 2 1 0 6 List factors to consider in selecting horse tack			
3 2 1 0 7 Establish an equine SAE (CD, E)								3 2 1 0 7 Demonstrate grooming of horses			
3 2 1 0 8 Identify local SAE opportunities (CD,E)				3 2 1 0 1 Identify the major symptoms and treatments for major internal and external parasites (AS)				3 2 1 0 8 Demonstrate saddling/bridling of a horse			
3 2 1 0 9 Implement an SAE program (CD, E)				3 2 1 0 2 List the major diseases, their symptoms, prevention, and treatment (AS)				3 2 1 0 9 Construct and present a set of oral reasons (CD)			
3 2 1 0 10 Set goals for an SAE program (CD, E)				3 2 1 0 3 vaccination procedures for major parasites and diseases (AS) (CD)				3 2 1 0 10 Write a business letter to a breed association			
B. HORSES IN OUR SOCIETY				3 2 1 0 4 Explain the principle of immunization in horses (AS)				G. MANAGEMENT OF AN EQUINE FACILITY			
				3 2 1 0 5 Practice drawing vaccines into syringe and injection pigs feet (AS)							
3 2 1 0 1 Discuss the history of equine (AC)				E. REPRODUCTION PROCESSES				3 2 1 0 1 Determin labor requirements of equine facility			
3 2 1 0 2 Determine the classification of equine (AS)								3 2 1 0 2 Detailing accurate records for equine operation			
3 2 1 0 3 Process of domestication of equine (AS)				3 2 1 0 1 Recognize the importance of genetics in the improvement of horses (AS)				3 2 1 0 3 Understanding pasure/stable management			
3 2 1 0 4 Equine Enterprises (E)				3 2 1 0 2 Name and identify major parts of cells (AS)				3 2 1 0 4 Equine Safety Issues			
3 2 1 0 5 Uses of Equine (CD)				3 2 1 0 3 Identify sizes and shapes of epithelial, muscle, adipose, nerve, bone, and blood (AS)				3 2 1 0 5 Determine use of buildings/fencing			
C. ANATOMY and PHYSIOLOGY of the HORSE				3 2 1 0 4 Describe the basic function of the above cell types				3 2 1 0 6 Accurately record cost analysis (AM)			
				3 2 1 0 5 Define osmosis and diffusion through cell membranes (AS)				H. PRINCIPLES OF TRAINING EQUINE			
3 2 1 0 1 Identify and label the surface anatomy (AS)				3 2 1 0 6 Explain sex determination at fertilization (AS)							
3 2 1 0 2 Name and explain functions of the major organs of the thoracic, abdominal, and pelvic cavities (AS)				3 2 1 0 7 Discuss sex-linked characters, crossing over, and mutation				3 2 1 0 1 Positive vs. Negative reinforcement			
3 2 1 0 3 List the normal pulsa rate and rectal temperatures of livestock (AS) (AM)				3 2 1 0 8 Label the parts of male/female reproduction systems and explain the function of each part (AS)				3 2 1 0 2 Understanding equine behaviors (AS)			
3 2 1 0 3 Identify and label the skiletal system (AS)				3 2 1 0 9 Describe the collecting and storing of semen (AS)				3 2 1 0 3 Understanding/Selecting proper training aids			
3 2 1 0 5 Study uses/importance of an Equine's teeth (AS)				3 2 1 0 10 Outline the process used in artificial insemination (AS)							
3 2 1 0 6 Identify and label the muscular system (AS)				3 2 1 0 11 Explain the advantages of using Ova transplants (AS)							

Kansas Agriculture Education OCCUPATIONAL PROFILE

Name _____ S.S. # _____/_____/_____

School _____ Instructor _____

RATING SCALE:

- | | |
|---------------------------------------|-------------------------------|
| 3 - Mastery of subject matter | (M)-Math Communications |
| 2 - Limited mastery of subject matter | (E)-Language Arts |
| 1 - Non mastery of subject matter | (S)-Science Competency |
| 0 - No Exposure to subject matter | (C)-Career Development Skills |
| | (LK) – Life Knowledge Lesson |

DIRECTIONS: Evaluate the student by checking the appropriate number to indicate the degree of competency reached. Rate each task to reflect employability readiness.

A. Colleges and Careers

- 3 2 1 0 1. Identify five potential colleges with agriculture programs. (LK HS 31)
- 3 2 1 0 2. Word process a Resume (LK HS 37)
- 3 2 1 0 3. Word process a cover letter.
- 3 2 1 0 4. Identify five potential references.
- 3 2 1 0 5. Contact potential references.

B. Food Safety and Handling

- 3 2 1 0 1. List the stages in Ag Processing
- 3 2 1 0 2. Discuss potential risks to food.
- 3 2 1 0 3. Justify the use of pesticides in food production.
- 3 2 1 0 4. Justify the use of fertilizers/hormones in food production.
- 3 2 1 0 5. Conduct an experiment in food packaging
- 3 2 1 0 6. Conduct an experiment in food seasoning

C. Entrepreneurships

- 3 2 1 0 1. Identify a potential food product to market to the community (LK HS 95)
- 3 2 1 0 2. Create the product.
- 3 2 1 0 3. Market the product.
- 3 2 1 0 4. Evaluate the business and make needed improvements.

D. Public Speaking

- 3 2 1 0 1. Identify a potential topic related to agriculture using the internet.
- 3 2 1 0 2. Write a speech manuscript for a 5 min. speech.
- 3 2 1 0 3. Evaluate the speech of a peer.

- 3 2 1 0 4. Revise the written manuscript and type.
- 3 2 1 0 5. Orally present the speech to the class.
- 3 2 1 0 6. Evaluate the oral speeches of peers.

E. Record Keeping

- 3 2 1 0 1. Maintain records on income, expense, and cash flow.
- 3 2 1 0 2. Complete end of the year reports. (LK HS 129)
- 3 2 1 0 3. Transfer information into an application using an Microsoft excel document.

F. Horticulture

- 3 2 1 0 1. Identify the structures of a plant (S)
- 3 2 1 0 2. Identify 75 common plants in Kansas.
- 3 2 1 0 3. Demonstrate three ways to propagate a plant.
- 3 2 1 0 5. Discuss the effects of growth hormones used on plant production (S,M)
- 3 2 1 0 6. List factors to consider when selecting a fertilizer (S,M)
- 3 2 1 0 7. Discuss safety precautions to take when working with fertilizers
- 3 2 1 0 8. Participate in a class landscaping project (M)

G. Animal Science

1. Discuss the purpose of the following systems (S)
- 3 2 1 0 A. Skeletal system
- 3 2 1 0 B. Muscular system
- 3 2 1 0 C. Digestive system

- 3 2 1 0 D. Respiratory system
- 3 2 1 0 E. Circulatory system
- 3 2 1 0 F. Nervous system
- 3 2 1 0 G. Endocrine system
- 3 2 1 0 2. Discuss the impact of AI in the livestock industry
- 3 2 1 0 3. Discuss the impact of ET in the livestock industry
- 3 2 1 0 4. Discuss the impact of cloning to the livestock industry

H. Wildlife Science

- 3 2 1 0 1. Develop an animal habitat (S)
- 3 2 1 0 2. Identify animals common in an area (S)
- 3 2 1 0 3. Discuss agricultural practices that preserve wildlife habitats
- 3 2 1 0 4. Discuss wildlife changes that have happened in your community
- 3 2 1 0 5. Discuss how they could be changed

I. Alternative Agriculture

- 3 2 1 0 1. Explain the role of alternative animals and crops in the agriculture industry
- 3 2 1 0 2. Name three specialty animals
- 3 2 1 0 3. Name three specialty crops
- 3 2 1 0 4. Research the a business based on alternative agriculture

H. Research in Ag Science

- 3 2 1 0 1. List the steps in the scientific method (S)
- 3 2 1 0 2. Determine a hypothesis (S)

PLANT AND ANIMAL SCIENCE-18301

ENROLLMENT DATE ____/____/____	COMPLETION DATE ____/____/____	HOURS COMPLETED _____
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I certify that the student received training in the areas indicated.

Student Signature _____ Date ____/____/____

Instructor Signature _____ Date ____/____/____

Administrator Signature _____ Date ____/____/____

- 3 2 1 0 3. Research a topic and create and experiment (S)
- 3 2 1 0 4. Write a report on the experiment (E)
- 3 2 1 0 5. Present the experiment orally to the class (E)

I. Agriculture Issues

- 3 2 1 0 1. Research a current agriculture issue
- 3 2 1 0 2. Present an oral and written report over this issue (E)
- 3 2 1 0 3. Participate in a debate over a current agriculture topic (E)

J. FFA and Leadership Activities

- 3 2 1 0 1. Discuss the three components of a complete agricultural education program
- 3 2 1 0 2. Describe the advantages of joining FFA
- 3 2 1 0 3. Serve on a POA committee
- 3 2 1 0 4. Maintain a record of leadership activities in a record book
- 3 2 1 0 5. Participate in an FFA CDE
- 3 2 1 0 6. Prepare a four to six minute speech over an agriculture related topic (E)

K. SAE

- 3 2 1 0 1. Examine goals and future SAE plans
- 3 2 1 0 2. Identify and evaluate career (C) opportunities and possibilities (C)
- 3 2 1 0 3. Make arrangements for an SAE visit by the instructor
- 3 2 1 0 4. Prepare a proficiency award application or state FFA degree over your SAE program

L. Listening Skills

- 1. Follow oral instructions:
 - 3 2 1 0 A. Listen for and identify key words.
 - 3 2 1 0 B. Listen for words that identify a procedure
 - 3 2 1 0 C. Listen for steps or actions to be performed
 - 3 2 1 0 D. Listen for clues regarding the order or sequence in which a task is performed
- 3 2 1 0 2. Analyze a speaker's point of view
- 3 2 1 0 3. Draw conclusion or make

generalizations from another's oral communications

M. Oral Communication

- 3 2 1 0 1. Organize notes and ideas for formal, semiformal, and informal presentations
- 3 2 1 0 2. Prepare and deliver a presentation appropriate to subject matter, purpose, and audience
- 3 2 1 0 3. Incorporate visual media into a presentation
- 3 2 1 0 4. Demonstrate concise, impromptu speaking skills.

N. Mathematics

- 3 2 1 0 1. Estimate, apply, and solve problems involving fractions, decimals percentages, and real numbers
- 3 2 1 0 2. Convert common units of measurement within and/or across measurement systems
- 3 2 1 0 3. Construct and interpret tables, charts, maps, and/or graphs
- 3 2 1 0 4. Apply measurement concepts of distance, direction, rate time and acceleration.

O. Writing

- 3 2 1 0 1. Use language, organization, and format appropriate to the subject matter, purpose, and audience
- 3 2 1 0 2. Compile and maintain records, logs, lab notebooks, and other documents

P. Computer Literacy

- 3 2 1 0 1. Define, understand, and use common computer technology terminology
- 3 2 1 0 2. Use presentation and multimedia software to design/create a variety of presentations
- 3 2 1 0 3. Access, navigate, and use on-line services

Q. Human Relation Skills

- 1. Perform a self assessment:
 - 3 2 1 0 A. Personal goals
 - 3 2 1 0 B. Standards and values
 - 3 2 1 0 C. Needs/wants
 - 3 2 1 0 D. Strengths/weaknesses

- 3 2 1 0 E. Interests/talents
- 2. Demonstrate interpersonal skills:
 - 3 2 1 0 A. Respect for others
 - 3 2 1 0 B. Respect for diversity
 - 3 2 1 0 C. Recognition of others' strengths
 - 3 2 1 0 D. Positive attitude

R. Decision Making/Problem Solving

- 3 2 1 0 1. Apply the steps in the decision making process
- 2. Utilize problem-solving skills:
 - 3 2 1 0 A. Identify the problem for resolution
 - 3 2 1 0 B. Define critical issues
 - 3 2 1 0 C. Analyze causes of a problem
 - 3 2 1 0 D. Utilize research and assessment skills
 - 3 2 1 0 E. Examine results of a problem
 - 3 2 1 0 F. Offer solutions to a problem
 - 3 2 1 0 G. Select a solution to a problem

S. Teamwork

- 1. Participate in team tasks:
 - 3 2 1 0 A. Establish team tasks
 - 3 2 1 0 B. Establish team standards
 - 3 2 1 0 C. Receive and give information
 - 3 2 1 0 D. Process information
 - 3 2 1 0 E. Plan for action
 - 3 2 1 0 F. Complete team task on time

T. Resource Management

- 3 2 1 0 1. Explain the relationship between setting goals and managing money
- 3 2 1 0 2. Impulse buying

V. Career Planning

- 3 2 1 0 1. Access and use information to develop education and career options
- 3 2 1 0 2. Prepare a personal budget
- 3 2 1 0 3. Develop a financial expectation
- 3 2 1 0 4. Participate in career exploration activities.

Energy Resources in Agriculture

Kansas Agricultural Education 18507

Hours Completed _____ Competencies Completed ____/151
Verification Signatures:

Student: _____ Date: _____

Instructor: _____ Date: _____

Name: _____

Instructor: _____ School Year: _____

Key to Integrated Competencies

(CD)- Career Development

(L)- Leadership

(E) - Experienced Based

(LK) - LifeKnowledge Lessons

(LA) – Language Arts

(M) - Math

(S) – Science

(SS) – Social Science

Circle to indicate level of competency achieved:

3 - Skilled-Works Independently **2** Limited skill-Needs assistance **1** -Skill undeveloped-but received instruction **0** -No

Introduction to Energy Use Past and Present

1. Define the following terms: (LA)

- 3 2 1 0 a. Alternative Energy
- 3 2 1 0 b. Bio Mass
- 3 2 1 0 c. Compost
- 3 2 1 0 d. Energy
- 3 2 1 0 e. Fuel Crops
- 3 2 1 0 f. Geothermal Energy
- 3 2 1 0 g. Global Warming
- 3 2 1 0 h. Greenhouse Effect
- 3 2 1 0 i. Hydroelectric Energy
- 3 2 1 0 j. Kinetic Energy
- 3 2 1 0 k. Methanol
- 3 2 1 0 l. Natural Resources
- 3 2 1 0 m. Net Energy Efficiency
- 3 2 1 0 n. Non-Renewable Resources
- 3 2 1 0 o. Potential Energy
- 3 2 1 0 p. Renewable Resources
- 3 2 1 0 q. Solar Energy
- 3 2 1 0 r. Wind Energy

Careers in Alternative Energy

- 3 2 1 0 1. List potential careers in alternative energy. (CD) (LK HS 123)
- 3 2 1 0 2. Select a career of interest and research education required, salary, and job description. (CD) (LK MS 66)
- 3 2 1 0 3. Present over the career you researched.(CD,LA)

Energy Calculations

- 1. Calculate the following terms:
- 3 2 1 0 a. Joule (M,S)
- 3 2 1 0 b. Work (M,S)

3 2 1 0

3 2 1 0

3 2 1 0

3 2 1 0

3 2 1 0

Sources of Energy

- 3 2 1 0 1. Identify three characteristics of energy (S)
- 3 2 1 0 2. Differentiate between potential and kinetic energy (S)
- 3 2 1 0 3. Identify the 6 types of energy (S)
- 3 2 1 0 4. Calculate energy conversion efficiencies (M,S)
- 3 2 1 0 5. Identify the proportions of the four uses of energy (S)
- 3 2 1 0 6. List examples of solar energy (S)
- 3 2 1 0 7. List examples of wind energy (S)
- 3 2 1 0 8. Identify examples of hydropower (S)
- 3 2 1 0 9. Identify examples of geothermal power (S)
- 3 2 1 0 10. Identify examples for biomass (S)
- 3 2 1 0 11. Identify common biofuels (S)
- 3 2 1 0 12. Identify fossil fuels (S)
- 3 2 1 0 13. Create a timeline of historical uses in energy patterns (S,SS)

Bio Fuels

- 1. Define the following terms: (LA)
- 3 2 1 0 a. Biofuel
- 3 2 1 0 b. By-Product
- 3 2 1 0 c. Ethanol
- 3 2 1 0 d. Biodiesel
- 3 2 1 0 e. Pollutant

3 2 1 0

3 2 1 0

3 2 1 0

2. Describe at least three careers in the biofuel industry. (CD)

Ethanol

- 3 2 1 0 1. Write the chemical formula for Ethanol. (S)
- 3 2 1 0 2. Describe the location of ethanol plants in the United State and Kansas. (SS, LA)
- 3 2 1 0 3. List inputs that are required for ethanol production.
- 3 2 1 0 4. Describe the difference between a Wet Mill and a Dry Mill ethanol plant.(LA)
- 3 2 1 0 5. List by-products created in ethanol production.
- 3 2 1 0 6. Describe where the greatest amount of energy is used in ethanol production. (LA)
- 3 2 1 0 7. Describe threats to quality assurance in ethanol production. (LA)
- 3 2 1 0 8. Describe potential threats to natural resources related to ethanol production. (S, LA)

Bio Diesel

- 3 2 1 0 1. What is the chemical formula for biodiesel. (S)
- 3 2 1 0 2. Describe where biodiesel plants are located in the US and Kansas.(SS, LA)
- 3 2 1 0 3. List the inputs that are required to create biodiesel.
- 3 2 1 0 4. List the steps required for biodiesel manufacturing.

- 3 2 1 0 5. Describe by-products created in biodiesel manufacturing.(LA)
- 3 2 1 0 6. Discuss the energy used to created biodiesel. (LA)
- 3 2 1 0 7. Describe potential threats to quality assurance in biodiesel production. (LA)
- 3 2 1 0 8. Describe potential threats to natural resources related to biodiesel production.(S, LA)

Methane

- 3 2 1 0 1. What is the chemical formula for Methane (S)
- 3 2 1 0 2. Describe where methane is used for energy in the US and Kansas.(SS, LA)
- 3 2 1 0 3. List the inputs that are required to create methane.
- 3 2 1 0 4. List the steps required for methane harvesting.
- 3 2 1 0 5. Describe by-products created in methane production. (LA)
- 3 2 1 0 6. Discuss the energy used to harvest methane. (LA)
- 3 2 1 0 7. Describe potential threats to quality assurance in harvesting of methane gas. (LA)
- 3 2 1 0 8. Describe potential threats to natural resources related to methane harvesting. (S, LA)
- 3 2 1 0 9. Research the impact of pollution as a result of biofuel production and use. (S, LA, E)

Renewable Resources

Environmental Impact

- 3 2 1 0 1. Identify the negative effects of various fuel choice decisions to the environment and economy. (SS) (LK AHS 22)
- 3 2 1 0 2. Identify the positive effects of various fuel choice decisions to the environment and economy.(SS)

Wind Power

- 3 2 1 0 1. List brief history of wind power.
- 3 2 1 0 2. Identify two types of wind machines.
- 3 2 1 0 3. Identify the parts of a horizontal turbine.

- 3 2 1 0 4. Identify factors in wind power and those that limit efficiencies.

- 3 2 1 0 5. Discuss economics of wind turbines.(LA)

Solar Power

- 3 2 1 0 1. Distinguish between solar energy and solar power.

- 3 2 1 0 2. Discuss how solar energy is stored.(LA)

- 3 2 1 0 3. Discuss economics of solar power.(LA)

Water Power

- 3 2 1 0 1. Discuss brief history of water power. (LA)

- 3 2 1 0 2. Discuss ways that water is used for power. (LA)

- 3 2 1 0 3. Discuss economic choices for water power. (LA, SS)

Bio Fuels

- 3 2 1 0 1. Discuss brief history of bio-fuels. (LA)

- 3 2 1 0 2. List types of bio-fuels.

- 3 2 1 0 3. Discuss economic choices of bio-fuels. (LA)

Conservation

- 1. Define the following terms: (LA)

- 3 2 1 0 a. Aerobic

- 3 2 1 0 b. Anaerobic

- 3 2 1 0 c. Biodegradable

- 3 2 1 0 d. Compost tumbler

- 3 2 1 0 e. Composting

- 3 2 1 0 f. Degradation

- 3 2 1 0 g. Depletion

- 3 2 1 0 h. Economic threshold of conservation

- 3 2 1 0 i. Environmental impact

- 3 2 1 0 j. Farming practices

- 3 2 1 0 k. Fossil fuels

- 3 2 1 0 l. Global

- 3 2 1 0 m. Hazardous waste

- 3 2 1 0 n. Natural Resources

- 3 2 1 0 o. Organic

- 3 2 1 0 p. Ozone layer

- 3 2 1 0 q. Pollution

- 3 2 1 0 r. Protected species

- 3 2 1 0 s. Recycling

- 3 2 1 0 t. Waste

- 3 2 1 0 2. Describe at least four careers in the conservation area (CD, LA)

Recycling

- 3 2 1 0 1. Identify the three primary types of recycling products.

- 3 2 1 0 2. Cite local, state, and federal recycling policies.(SS)

- 3 2 1 0 3. Collect items that are recyclable. (E)

Composting

- 3 2 1 0 1. Breakdown the processes of composting. (S)

- 3 2 1 0 2. Compare and contrast aerobic and anaerobic composting. (S)

- 3 2 1 0 3. List the types of composting.

- 3 2 1 0 4. Categorize items as composting material or non-composting material

- 3 2 1 0 5. Describe the benefits of composting (LA)

- 3 2 1 0 6. Invent small composting models. (E)

Water Conservation

- 3 2 1 0 1. List five water conservation methods used in the home.(S)

- 3 2 1 0 2. List three water conservation methods used on the farm.(S)

- 3 2 1 0 3. Calculate savings on water bills by applying conservation methods. (M,E)

Conservation Tillage

- 3 2 1 0 1. List three soil conservation methods(S)

- 3 2 1 0 2. Discuss benefits from using carbon credits.(S, LA)

- 3 2 1 0 3. Describe three tractor maintenance practices that conserve energy. (LA)

- 3 2 1 0 4. Compare costs of nutrient loss (through burning) versus tillage costs.(M,E)

- 3 2 1 0 5. Calculate the costs of burning versus no-till. (M)

Opportunities in FFA

- 3 2 1 0 1. Research and present a 4-6 minute speech on an agricultural topic.(L, LA, E) (LK HS 86 & 90)

- 3 2 1 0 2. Serve on a POA committee. (L, E) (LK AHS 47)

- 3 2 1 0 3. Participate in at least one activity above the chapter level.(L, E)

- 3 2 1 0 4. Demonstrate concise, impromptu speaking skills. (LA, L, E) (LK HS 84)

- 3 2 1 0 5. Conduct strengths assessment to determine possible career options. (L, CD, E) (LK HS 31)

SAE

[Type text]

- | | | | |
|------------|--|------------|--|
| 3 2 1 0 1. | Maintain records on income and expense. (M, CD, E) (LK HS 129) | | grammar, spelling, and punctuation.(LA, CD) |
| 3 2 1 0 2. | Complete a cash flow statement. (M, CD, E) | 3 2 1 0 3. | Create and present technical information in common graphs and charts. (M, CD, LA, E) |
| 3 2 1 0 3. | Complete year end records. (M, CD, E) | 3 2 1 0 4. | Compile and maintain record, logs, lab notebooks, and other documents.(M, CD) |
| 3 2 1 0 4. | Complete a SAE packet. (M, CD, E) | 3 2 1 0 5. | Use style manuals or software to prepare documentation and reference lists.(CD) |
| 3 2 1 0 5. | Complete a proficiency award application. (M, CD, E) (LK AHS 53) | | |

Work Place Skills

Resource Management

- 3 2 1 0 1. Locate information and select the materials, tools, and equipment needed to perform an activity or build a project. (CD)
- 3 2 1 0 2. Determine cost, time, and resources needed to complete a task within an industry or occupation.(CD)
- 3 2 1 0 3. Explain the relationship between setting goals and managing money. (L)
- 3 2 1 0 4. Identify fixed and flexible expenses.(CD)
- 3 2 1 0 5. Identify planned and impulse buying.

Decision Making/Problem Solving

- 1. Describe the factors that impact on decision making: (LA)
 - 3 2 1 0 a. Needs and wants
 - 3 2 1 0 b. Values
 - 3 2 1 0 c. Goals
 - 3 2 1 0 d. Standards
- 3 2 1 0 2. Distinguish between types of decisions: economic and/or technical.(LA)
- 3 2 1 0 3. Apply the steps in interpreting a problem, coming up with a plan and then a result.(S)

Writing

- 3 2 1 0 1. Use language, organization, and format appropriate to the subject matter, purpose, and audience.(L, CD)
- 3 2 1 0 2. Check, edit, and revise for correct information, appropriate emphasis,

Kansas Family and Consumer Sciences Education Work and Family Studies Program

Course: **Food Science - 22203**

CIP Code: 19.0000 Course # 22203

Rating Scale: 3 Skilled- Works Independently
2 Limited Skills- Requires Assistance
1 Skill Undeveloped
0 No exposure- No instruction or training

Student:		Grade:	
Teacher:		School:	
Enrolled Date:	Completion Date:	Graduation Date:	
Student Signature		Teacher Signature	

Directions: The following competencies are required for full approval of a course in a Family and Consumer Sciences Program. Check the appropriate number to indicate the level of competency reached for student evaluation.

Academic Foundations

Benchmark: 0.1 Apply reading and writing, math, and science skills in personal, professional, and community situations. (CC K&S)	3	2	1	0
0.1.1 Writes effectively for a variety of audiences, purposes, and contexts. (narrative, expository, technical, persuasive) (W1.4▲)				
0.1.2 Comprehends a variety of texts. (narrative, expository, technical, persuasive) (R1.4▲)				
0.1.3 Determines the meaning of words or phrases using context clues from sentences or paragraphs. (R1.3.1▲)				
0.1.4 Understands the purpose of text features and uses such features to locate information in and to gain meaning from appropriate-level texts. (R1.4.2▲)				
0.1.5 Uses information from the text to make inferences and draw conclusions. (R1.4.5▲)				
0.1.6 Adjusts original rational number estimate of a real-world problem based on additional information. (a frame of reference) (M1.3.A1▲) (\$)				
0.1.7 Generates and/or solves multi-step real-world problems with real numbers and algebraic expressions using computational procedures and mathematical concepts. (M1.4.A1a,b,d ▲) (\$)				
0.1.8 Uses data analysis in real-world problems with rational number data sets to compare and contrast two sets of data, to make accurate inferences and predictions, to analyze decisions, and to develop convincing arguments from data displays. (M4.2.A1▲) (\$)				
0.1.9 Research, apply, and evaluate information to accomplish tasks. (CC K&S) (SC CD2.1)				

Communications

Benchmark: 0.2 Demonstrate appropriate communication skills that contribute to positive relationships. (*13.3) (21 st)	3	2	1	0
0.2.1 Use appropriate communication strategies for most effective outcome. (*13.3.1) (CC K&S) (21 st) (SC P/SD 1.2)				
0.2.2 Use listening and writing skills appropriately to communicate clearly. (*13.3.2) (*13.3.3) (CC K&S) (21 st) (S1.1.5)				
0.2.3 Apply and/or interpret nonverbal communication to fully understand meaning. (CC K&S)				
0.2.4 Communicate respectfully and effectively with people of different cultures and diverse perspectives. (*13.3.5) (CC K&S) (21 st) (SC P/SD 1.2) (SC CD 1.2)				

Problem Solving and Critical Thinking

Benchmark: 0.3 Apply thinking and problem-solving processes to personal, professional and community issues. (21 st) (SC AD 1.2)	3	2	1	0
0.3.1 Clarify personal and family issues.				
0.3.2 Identify adequate, reliable information, and resources for personal and family problem solving. (CC K&S)				
0.3.3 Critique alternative methods of solving problems and accomplishing tasks. (CC K&S)				
0.3.4 Evaluate potential consequences of alternative choices. (CC K&S)				
0.3.5 Use criteria and standards to make ethical decisions. (21 st)				
0.3.6 Implement an action plan.				
0.3.7 Evaluate outcomes to measure progress. (CC K&S)				

Cross-walking Key: (*) National and Kansas (2000) Family and Consumer Sciences Standards (\$) National Standards for Financial Literacy (CC K&S) Career Cluster Knowledge and Skills (www.careerclusters.org) (21st) 21st Century Learning Skills (www.21stcenturyskills.org) (M) Kansas Mathematics Curricular Standards (W) Kansas Writing Curricular Standards (H-G) Kansas History & Government; Economics & Geography Curricular Standards

(▲) Assessed Indicator for Kansas Assessment Tests (R) Kansas Reading Curricular Standards (SC) Kansas School Counseling Standards (S) Kansas Science Curricular Standards

Information Technology Applications

Benchmark: 0.4 Use technology to access, manage, integrate, and create information. (CC K&S)		3	2	1	0
0.4.1	Use a variety of communication technologies to locate information and manage records for family, work, and community settings. (*13.3.6) (CC K&S) (21 st)				
0.4.2	Use technology to analyze, manipulate, and interpret information. (CC K&S) (21 st) (S5.1.1▲)				
0.4.3	Identify adequate, reliable information, and resources. (CC K&S)				

Safety, Health and Environmental

Benchmark: 0.5 Evaluate potential hazardous situations to defuse them and determine intervention strategies. (CC K&S)		3	2	1	0
0.5.1	Manage the physical and social environment to reduce conflict and promote safety in family, workplace, and community. (CC K&S) (21 st) (SC P/SD 3.1)				
0.5.2	Practice safety techniques to create a safe environment. (CC K&S) (SC P/SD 3.1)				
0.5.3	Understand how to document and report emergency/crisis situations and outcomes to the appropriate authorities. (CC K&S)				
0.5.4	Follow regulations, organizational policies, and procedures to assure a safe and healthy environment. (CC K&S) (Gov1.2▲ A) (SC CD 3.2) (S6.1▲)				

Leadership and Teamwork and Ethics and Legal Responsibilities

Benchmark: 0.6 Demonstrate leadership, citizenship, and teamwork skills required for success in the family, workplace, and community. (*13.5) (21 st)		3	2	1	0
0.6.1	Examine the FCCLA organization and its relationship to the family and consumer sciences curriculum.				
0.6.2	Recognize and model positive leadership and teamwork behaviors to inspire others. (CC K&S) (21 st) (H-G)				
0.6.3	Identify ways to be a responsible citizen in families, career, and communities. (Gov2.2▲ K) (SC CD 1.1)				
0.6.4	Recognize diverse abilities of team members. (21 st) (SC AD 1.2)				
0.6.5	Apply leadership, citizenship, and teamwork skills in authentic experiences. (21 st) (H-G) (SC CD 3.2)				
0.6.6	Demonstrate ethical behavior in personal, workplace, and community context. (21 st) (SC P/SD 1.1) (SC CD 3.2)				

Career Development and Systems

Benchmark: 0.7 Analyze strategies to manage the multiple individual, family, career, and/or community roles and responsibilities. (*1.1) (CC K&S) (21 st)		3	2	1	0
0.7.1	Analyze ways that individual career goals can impact the family's capacity to meet goals for all family members. (*1.1.3) (CC K&S) (\$) (SC AD3.1) SC CD 1.1)				
0.7.2	Analyze the potential impact of career path decisions on balancing work and family. (*1.1.4) (\$) (SC AD 3.1)				
0.7.3	Develop a life plan for achieving individual, family and/or career goals. (*1.1.6) (CC K&S) (21 st) (SC P/SD 2.1)				
0.7.4	Determine skills and knowledge needed for a life plan. (21 st) (SC AD 1.2)				
0.7.5	Demonstrate processes for cooperating, compromising and collaborating to achieve goals. (*13.5.7) (21 st) (SC P/SD 2.1) (SC AD 1.2)				

Technical Skills**COMPREHENSIVE STANDARD: 9.0 Integrate knowledge, skills, and practices required for careers and family in food science. (*9.0)**

Benchmark: 9.1 Analyze career paths within the food science industry.		3	2	1	0
9.1.1	Evaluate jobs and preparation requirements for food science careers within the food science industry. (*9.1.1) (CC K&S)				
9.1.2	Assess personal qualifications, interests, values, and educational food science preparation for employment in the industry and applications for the home. (*9.1.3) (CCK&S)				
Benchmark: 9.2 Analyze the interrelationship of food, nutrition, and science. (*9.3)		3	2	1	0
9.2.1	Define the study of the science of food and nutrition. (CC K&S) (S3.5.3▲)				
9.2.2	Analyze various guidelines for good nutrition that promote the health of individuals at home, work, and community. (*9.3.6) (S6.1)				
9.2.3	Analyze and examine reliable sources of consumer food and nutrition information. (*9.3.2 and *9.3.4)				
Benchmark: 9.3 Examine methods for use of the science laboratory to conduct and report results of food science experiments. (S1.1▲)		3	2	1	0
9.3.1	Apply proper safety techniques for the laboratory. (S1.1.2▲)				

Cross-walking Key: (*) National and Kansas (2000) Family and Consumer Sciences Standards (\$) National Standards for Financial Literacy (CC K&S) Career Cluster Knowledge and Skills (www.careerclusters.org) (21st) 21st Century Learning Skills (www.21stcenturyskills.org) (M) Kansas Mathematics Curricular Standards (W) Kansas Writing Curricular Standards (H-G) Kansas History & Government; Economics & Geography Curricular Standards

(▲) Assessed Indicator for Kansas Assessment Tests (R) Kansas Reading Curricular Standards (SC) Kansas School Counseling Standards (S) Kansas Science Curricular Standards

9.3.2	Practice good personal hygiene procedures. (*9.2.5) (S6.1)				
9.3.3	Identify the location and demonstrate the correct use of emergency equipment in the laboratory. (S1.1.3▲)				
9.3.4	Identify basic laboratory equipment, rules for usage, and performance techniques. (*9.5.4) (CC K&S) (S1.1.3▲)				
9.3.5	Demonstrate how to make accurate and precise laboratory measurements. (CC K&S) (S1.1.3▲)				
9.3.6	Demonstrate the use of the scientific method when participating in food science and consumer experiences. (CC K&S) (S1.1▲)				
Benchmark: 9.4 Evaluate the causes and prevention of food contamination and spoilage in industry and home. (*9.2)		3	2	1	0
9.4.1	Identify sources and symptoms of food borne illness. (*9.2.1) (S6.1)				
9.4.2	Use the Hazard Analysis Critical Control Point during all food handling processes to minimize the risk of food borne illness. (*9.2.4) (CC K&S)				
9.4.3	Use time, temperature, date markings, cross contamination, hand washing, and personal hygiene as criteria for safe food preparation. (*9.6.9)				
9.4.4	Explore the agencies that regulate food quality, protect consumer rights, and handle consumer complaints.				
Benchmark: 9.5 Analyze methods used in food product development and marketing.		3	2	1	0
9.5.1	Examine the sensory factors that make up the sensory characteristics for tasting food. (*9.5.6)				
9.5.2	Demonstrate controlled sensory tasting and rating techniques. (*9.5.7) (S1.1▲)				
9.5.3	Evaluate food label information.				
9.5.4	Calculate food cost and examine price point in food product development and marketing.				
Benchmark: 9.6 Apply knowledge of metabolism and digestion to establish life-long habits of good nutrition.		3	2	1	0
9.6.1	Analyze the relationship between calories, food, and energy. (S3.5.3▲)				
9.6.2	Examine the digestive system and the role of enzymes in digestion and food preparation. (S3.5)				
Benchmark: 9.7 Evaluate a variety of changes, including chemical and physical, that affect food product quality.		3	2	1	0
9.7.1	Relate differences in chemical and physical changes to the state of matter. (S2A.2▲)				
9.7.2	Identify chemical symbols and use these symbols in writing chemical formulas and equations. (S2A.2.2▲)				
9.7.3	Compare the process of heat transfer in cooking and baking processes. (S2A.3) (S2B.2.2▲)				
9.7.4	Demonstrate how the major leavening agents are used in foods and describe the actions observed. (S2A.3▲)				
9.7.5	Demonstrate emulsification in food technology. (S2A.3)				
9.7.6	Demonstrate the process of fermentation and explain the usage in food technology. (S2A.3)				
9.7.7	Demonstrate the process of pasteurization and explain the usage in food technology. (S2A.3)				
Benchmark: 9.8 Apply science process skills when analyzing the structure and composition of food and their relationship to health and wellness. (S6.1)		3	2	1	0
9.8.1	Explain the properties and functions of water. (S3.5)				
9.8.2	Analyze the structure and composition of carbohydrates and fiber. (S3.5)				
9.8.3	Analyze the properties and composition of lipids in relation to their functions in food preparation and the body. (S6.1)				
9.8.4	Describe the chemical nature and molecular structure of protein and the functions of protein in food. (S3.5.2▲)				
9.8.5	Examine the types, functions, sources, and deficiencies of vitamins, minerals, and phytonutrients. (S6.1)				
9.8.6	Describe and analyze the impact of acids and bases in foods. (S2A.3.2)				
Benchmark: 9.9 Analyze methods used and factors involved in the scientific process of food. (CC K&S) (S2A.3)		3	2	1	0
9.9.1	Examine the use of additives in food processing and preservation. (S2A.3.2)				
9.9.2	Explain the process and conduct methods of food dehydration. (S2A.3.2)				
9.9.3	Examine the process of curing. (S2A.3.2)				
9.9.4	Identify and apply the science of freezing foods. (S2A.3.2)				
9.9.5	Explain how irradiation preserves foods. (S2A.3.2)				
9.9.6	Explore the impact of storing conditions on staling, rancidity, and molding. (S2A.3.2)				

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(▲) Assessed Indicator for Kansas Assessment Tests (R) Kansas Reading Curricular Standards (SC) Kansas School Counseling Standards (S) Kansas Science Curricular Standards

Horticulture or Horticulture I

KS Agricultural Education 18052

Hours Completed _____ Competencies Completed _____/148
Verification Signatures:

Student: _____ Date: _____

Instructor: _____ Date: _____

Name: _____

Instructor: _____ School Year: _____

Key to Integrated Competencies

(CD)- Career Development

(L)- Leadership

(E) - Experienced Based

(LK) - LifeKnowledge Lessons

(LA) – Language Arts

(M) - Math

(S) – Science

(SS) – Social Science

Circle to indicate level of competency achieved:

3 - Skilled-Works Independently **2** Limited skill-Needs assistance **1** -Skill undeveloped-but received instruction **0** -No exposure

Horticulture Industry and Careers

- 3 2 1 0 1. Identify career opportunities in horticulture and the green industry career pathway (CD) (LK HS 123)
- 3 2 1 0 2. Explain the impact of horticulture on the local economy (SS, LA)
- 3 2 1 0 3. List the level of education for careers in the horticulture field (CD) (LK HS 40)
- 3 2 1 0 4. Identify workplace skills necessary for a horticulture career (CD)
- 3 2 1 0 5. Complete a job application, resume, cover letter and interview for a horticulture related career (CD,L,E) (LK HS 36)
- 3 2 1 0 6. Utilize the steps of the scientific method on a horticulture experiment (S:1.1.2, 1.1.3, 1.1.4)

Occupational and Personal Safety

- 3 2 1 0 1. Interpret Data from a chemical label (S)
- 3 2 1 0 2. Describe the purpose and information that is contained in a Materials Safety Data Sheet (MSDS) (LA, CD) (LK MS 9)
- 3 2 1 0 3. Demonstrate and use proper lifting techniques for heavy materials (E, CD)
- 3 2 1 0 4. Describe common safety practices and uses for power equipment in horticulture (CD, LA)
- 3 2 1 0 5. Identify common hazards associated with the horticulture industry (cleanliness)

- 3 2 1 0 6. Identify potential safety hazards when using objects with sharp and pinch points

Plant Taxonomy

- 3 2 1 0 1. Explain the history of scientific nomenclature (S:3.7.5, LA)
- 3 2 1 0 2. Classify plants using the binomial system (S:3.7.5)
- 3 2 1 0 3. List plant identification characteristics

Plant Structures

- 3 2 1 0 1. Identify parts of a cell (S:3.1.1)
- 3 2 1 0 2. Identify parts of monocot and dicot seeds (S)
- 3 2 1 0 3. Differentiate between monocot and dicot seeds (S)
- 3 2 1 0 4. Dissect a monocot and a dicot seed (S)
- 3 2 1 0 5. Describe the function of and distinguish between different root systems: Tap & Fibrous (S: 3.1.5)
- 3 2 1 0 6. Dissect at least one root system (S: 3.1.5, E)
- 3 2 1 0 7. Identify and discuss the purpose of specialized roots; tuberous, adventitious (S: 3.1.5, LA)
- 3 2 1 0 8. Describe the function of stems (S: 3.1.5, LA)
- 3 2 1 0 9. Identify the different stem forms and specialize stems bulb, corms, spurs, tubers, stolons & rhizomes (S: 3.1.5)
- 3 2 1 0 10. Dissect a monocot and a dicot stem (S: 3.1.5, E)
- 3 2 1 0 11. Describe the function of leaves (S: 3.1.5, LA)

- 3 2 1 0 12. Label the internal and external parts of a leaf (S: 3.1.5)

- 3 2 1 0 13. Distinguish between different leaf shapes, arrangements, venations and margins (S: 3.1.5)

- 3 2 1 0 14. List the functions of a flower (S: 3.1.5)

- 3 2 1 0 15. Identify parts of a complete and an incomplete flower (S: 3.1.5)

- 3 2 1 0 16. Explain the functions of each part of a flower (S: 3.1.5, LA)

- 3 2 1 0 17. Define and give examples of monoecious and dioecious plants (S: 3.1.5, LA)

- 3 2 1 0 18. Explain the functions of a fruit (S: 3.1.5, LA)

- 3 2 1 0 19. Dissect a fruit (S: 3.1.5, E)

Plant Growth Processes

- 3 2 1 0 1. Explain and describe the process of photosynthesis (S: 3.1.4, LA)

- 3 2 1 0 2. Explain the environmental factors that affect photosynthesis (S: 3.5.2, LA)

- 3 2 1 0 3. Describe the process of respiration (S: 3.5.3, LA)

- 3 2 1 0 4. Explain the environmental factors that affect respiration (S, LA)

- 3 2 1 0 5. Explain the processes of translocation and transpiration (S, LA)

- 3 2 1 0 6. Explain the environmental factors that affect transpiration (S, LA)

- 3 2 1 0 7. Discuss the process of nutrient absorption (S, LA)

- 3 2 1 0 8. Relate environmental factors that affect plant growth (S)
- 3 2 1 0 9. Describe geotropism and photoperiodism in horticulture (S, LA)
- 3 2 1 0 10. List plant growth regulators used in horticulture (S)
- 3 2 1 0 11. Explain how plant growth regulators affects the activity of plant metabolism (S, LA)
- 3 2 1 0 12. Predict and manipulate the results of photoperiodism and plant growth regulators (S)
- 3 2 1 0 13. Utilize USDA Hardiness Zones in plant selection (SS, E)

Soils and Soil Fertility

- 3 2 1 0 1. Identify and explain the purpose of each of the four soil compositions: Oxygen, Water, Particles, Organic Matter (LA)
- 3 2 1 0 2. Identify the three soil particles: sand, silt, clay and use the soil texture triangle
- 3 2 1 0 3. Describe the methods of building soil fertility (LA)
- 3 2 1 0 4. Explain purposes of nutrients for plant growth (LA)
- 3 2 1 0 5. Explain the soil sampling process (LA)
- 3 2 1 0 6. List and differentiate between the macro and micro nutrients (S: 2A.2.2, LA)
- 3 2 1 0 7. Describe how pH affect plants (S: 2A.3.3, LA)
- 3 2 1 0 8. Perform soil tests and interpret results (E)
- 3 2 1 0 9. Formulate the proper mix of fertilizers (M, E)

Plant Genetics

- 3 2 1 0 1. Explain the relationship between DNA, genes and alleles (S:3.2.1, LA)
- 3 2 1 0 2. Identify dominant and recessive genes and homozygous and heterozygous combinations (S:3.2.1, 3.2.3)
- 3 2 1 0 3. Apply fundamentals of Mendalian genetics (S: 3.2.1, 3.2.3)

- 3 2 1 0 4. Predict genotypic and phenotypic combinations using a punnet square (S: 3.2.1, 3.2.3)
- 3 2 1 0 5. Identify biotechnology applications in the Horticulture industry (M, S: 5.1.1)
- 3 2 1 0 6. Differentiate between mitosis and meiosis cell division (S: 3.2.4)

Plant Propagation

- 3 2 1 0 1. Discuss the difference between asexual and sexual propagation (S, LA)
- 3 2 1 0 2. Describe the process of pollination and other factors that impact it (S, LA)
- 3 2 1 0 3. Differentiate between self-fertilization and cross-fertilization (S: 3.2.4)
- 3 2 1 0 4. Name the requirements for seed germination and growth
- 3 2 1 0 5. Test and calculate seed germination percentage (M)
- 3 2 1 0 6. List methods of asexual reproduction
- 3 2 1 0 7. Perform asexual propagation by the following methods:
 - 3 2 1 0 a. Leaf & Leaf bud cuttings (E)
 - 3 2 1 0 b. Herbaceous, softwood, semi-hardwood & hardwood stem cutting (E)
 - 3 2 1 0 c. Root cutting (E)
 - 3 2 1 0 d. Separation of bulbs, corms, tubers, tuberous roots & rhizomes (E)
- 3 2 1 0 8. Describe the application of advanced propagation techniques: grafting, patch and T budding, mound and air layering, micro propagation and tissue culture (S: 5.1.1, LA)

Weed, Disease, and Pest Control

- 3 2 1 0 1. Identify weed, disease, and pest damage (E)
- 3 2 1 0 2. Show diseased material handling techniques
- 3 2 1 0 3. Demonstrate how to mix pesticides (M, E)

General Greenhouse Practices

- 3 2 1 0 1. Demonstrate proper methods of potting and transplanting mature plants (E)
- 3 2 1 0 2. Demonstrate proper methods of using rooting hormones (E)
- 3 2 1 0 3. Demonstrate proper methods of sowing seeds (E)

- 3 2 1 0 4. Demonstrate proper methods of transplanting seedling or cuttings (E, CD)
- 3 2 1 0 5. Demonstrate proper methods of pinching and plants and flowers (E, CD)
- 3 2 1 0 6. Demonstrate proper methods of fertilizer application (E, CD)
- 3 2 1 0 7. Demonstrate proper methods of watering (E)
- 3 2 1 0 8. Identify basic types and sizes of containers used in commercial greenhouses (CD, E)

Nursery and Landscape Industry

- 3 2 1 0 1. Explain proper turf care and maintenance (LA)
- 3 2 1 0 2. Explain proper shrub/tree care pruning and maintenance (LA)
- 3 2 1 0 3. Install plant materials into a landscape (E, CD)
- 3 2 1 0 4. Identify basic landscape design principles
- 3 2 1 0 5. Identify 10 trees – deciduous or evergreen
- 3 2 1 0 6. Identify 10 shrubs – deciduous or evergreen
- 3 2 1 0 7. Identify 3 grasses – cool or warm season
- 3 2 1 0 8. Identify 5 groundcovers

Floriculture Industry

- 3 2 1 0 1. Identify basic tools and materials used in floriculture and the greenhouse
- 3 2 1 0 2. Identify basic principles of floral arranging and elements of design
- 3 2 1 0 3. Identify color relationships
- 3 2 1 0 4. Construct a finished floriculture product using design principles (E, CD)
- 3 2 1 0 5. List the different floral design forms
- 3 2 1 0 6. Identify 10 foliage plants
- 3 2 1 0 7. Identify 10 florist crops
- 3 2 1 0 8. Identify 10 bedding plants

Vegetable Gardening

- 3 2 1 0 1. Describe the amount of water and space each plant should have (M)
- 3 2 1 0 2. Develop a home garden plan (M, E)

- 3 2 1 0 3. Identify the difference between a fruit and a vegetable
- 3 2 1 0 4. Describe the benefits of a home garden
- 3 2 1 0 5. Analyze organic versus nonorganic gardening methods
- 3 2 1 0 6. Identify 5 perennials or bulbs (CD)
- 3 2 1 0 7. Identify 10 fruits or vegetables (CD)

Horticulture Math

- 3 2 1 0 1. Utilize area, perimeter, and volume calculations (M)
- 3 2 1 0 2. Demonstrate proper measuring techniques (M, E, CD)
- 3 2 1 0 3. Create drawings to scale (M, E, CD)
- 3 2 1 0 4. Calculate materials needed for proper greenhouse and landscape applications-ex. amount of media for pots and plant (M, E, CD)
- 3 2 1 0 5. Demonstrate proper mathematical conversions (M)

Opportunities in the FFA

- 3 2 1 0 1. Research and present a 3-5 minute speech on an agricultural topic.(LK HS 90) (L, LA)
- 3 2 1 0 2. Serve on a POA committee.(LK AHS 45) (L)
- 3 2 1 0 3. Participate in a local chapter activity. (L)
- 3 2 1 0 4. Demonstrate how to conduct an engaging chapter meeting. (LK AHS 47) (L)
- 3 2 1 0 5. Identify and relate the benefits of FFA to his/her education and personal goals. (L)

SAE

- 3 2 1 0 1. Maintain records on income and expense.(LK MS 69) (M, CD, E)
- 3 2 1 0 2. Complete a cash flow statement. (M, CD, E)
- 3 2 1 0 3. Complete year-end records.(M, CD, E)
- 3 2 1 0 4. Complete a SAE packet.(LK AHS 53)

Work Place Skills

Resource Management

- 3 2 1 0 1. Locate information and select the materials, tools, and equipment needed to perform an activity or build a project.(CD)

- 3 2 1 0 2. Determine cost, time, and resources needed to complete a task within an industry or occupation.(CD)
- 3 2 1 0 3. Explain the relationship between setting goals and managing money. (CD,LK AHS 9)
- 3 2 1 0 4. Identify fixed and flexible expenses.
- 3 2 1 0 5. Identify planned and impulse buying.

Worth Ethics

- 1. Interpret workplace policies related to: (CD)
 - 3 2 1 0 a. Safety
 - 3 2 1 0 b. Personal hygiene
 - 3 2 1 0 c. Absence and personal leave
 - 3 2 1 0 d. Substance abuse
 - 3 2 1 0 e. Employee theft
 - 3 2 1 0 f. Sexual harassment
 - 3 2 1 0 g. Termination/Legal actions
 - 3 2 1 0 h. Punctuality and dependability
 - 3 2 1 0 i. Responsibility for position
 - 3 2 1 0 j. Accuracy
 - 3 2 1 0 k. Cost effectiveness
- 2. Understand and value effective work ethic attitudes and behaviors such as: (CD, L)
 - 3 2 1 0 a. Acceptance of the job requirement
 - 3 2 1 0 b. A willingness to take initiative with new challenges
 - 3 2 1 0 c. Take responsibility for decision and actions.
- 3 2 1 0 1. Compare and complete various examples of job application forms (CD, LA)
- 3 2 1 0 2. Demonstrate personal characteristics that lead to job satisfaction.
- 3 2 1 0 3. Maintain an opening to lifelong learning.
- 3 2 1 0 4. Create a portfolio or resume' or other means that display academic and technical skill and accomplishments. (E, LA, CD)

Mathematics

- 3 2 1 0 1. Estimate, apply and solve problems involving fraction, decimals, percentages, and real numbers. (M)
- 3 2 1 0 2. Decide whether a problem situation is best solved using computer, calculator, paper and pencil, or mental arithmetic/estimation techniques.(M)

- 3 2 1 0 3. Translate written and /or verbal statements into mathematical expressions.(M, LA)
- 3 2 1 0 4. Convert common units of measurement within and /or across measurement systems (metric/English, etc.).(M)
- 3 2 1 0 5. Construct and interpret tables, charts, maps, and/or graphs.(M)
- 3 2 1 0 6. Apply measurement concepts of distance, direction, rate, time, and acceleration.(M)
- 3 2 1 0 7. Interpret measures of central tendency mean, median, mode, and variance.(M)

Kansas Agriculture Education

Name _____ SSN ____-____-_____

Instructor _____

RATING SCALE:
3: Skilled, works independently
2: Competent, may need assistance
1: Received instruction, skill undeveloped
0: No exposure, instruction or training

INTEGRATION:
(M) Math (S) Science
(E) Language Arts (L) Lab Activity
(C) Career Development Skill

Principles of Ag Science—Plant -18060

Enrollment Date _____ Completion Date _____ Hours completed _____
_____/_____/_____/_____/_____/_____

I certify that the student received the training in the area indicated.

Student Signature _____ Date _____

Instructor Signature _____ Date _____

I. History and Careers in Plant Science

- 3 2 1 0 1. Investigate the diversity of careers in plant science
- 3 2 1 0 2. Attend job or career fields
- 3 2 1 0 3. Contact plant science professional organizations
- 3 2 1 0 4. Job shadow a professional in the plant industry
- 3 2 1 0 5. Create a timeline of the history of plant science, relating the past, present and future

II. Supervised Agriculture Experience (SAE) & Record Keeping

- 3 2 1 0 1. Identify and maintain the SAE (C)
- 3 2 1 0 2. Construct a personal budget (M)
- 3 2 1 0 3. Utilize the Kansas FFA SAE Record book to monitor the SAE (C)
- 3 2 1 0 4. Complete a local and district proficiency award applications (E)
- 3 2 1 0 5. Complete chapter and/or State FFA Degree applications (E)
- 3 2 1 0 6. Use Quicken to track income and expense in cash, checking, and savings (C)
- 3 2 1 0 7. Track SAE skills developed, hours worked as well as FFA, school, and community activities using the Ag Ed record book (C)
- 3 2 1 0 8. Set appropriate SAE long and short term goals (E)

A. Lab Activities (L)

- 3 2 1 0 1. Prepare income and expense records (C, M)
- 3 2 1 0 2. Prepare monthly cash flow statements (C, M)
- 3 2 1 0 3. Record personal and business inventories, assets, and liabilities (C, M)

III. The National FFA Organization and Leadership

- 3 2 1 0 1. Participate in Student Development activities established by the local POA established by the local POA

- 3 2 1 0 2. Participate in Chapter Development activities
- 3 2 1 0 3. Participate in Community Development activities established by the local POA
- 3 2 1 0 4. Research a 3-8 minute speech on an agricultural topic (E)
- 3 2 1 0 5. Write a final manuscript for a 3-8 minute speech over an agriculture topic using MLA style with title page and works cited (C, E)
- 3 2 1 0 6. Present a memorized 3-8 minute agriculture speech to the class (C, E)
- 3 2 1 0 7. Participate in the Agronomy Career Development Event (C)

IV. Basic soil properties and fertility

- 3 2 1 0 1. Define soil texture and structure
- 3 2 1 0 2. Use the textural triangle to identify classification
- 3 2 1 0 3. Describe water holding capacity, available water, and wilting points, permeability, leaching are effected by soil texture and nutrient availability
- 3 2 1 0 4. Perform and Interpret soil test data and give objective recommendations
- 3 2 1 0 5. Describe how mass flow, diffusion, and root interception affect nutrient uptake
- 3 2 1 0 6. Illustrate the N-cycle and how climate, soil, and plants effect it
- 3 2 1 0 7. Describe and distinguish between the different soil management practices in Ag
- 3 2 1 0 8. Describe how pH affects soil health and nutrient availability
- 3 2 1 0 9. Distinguish between point and non-point sources in the environment
- 3 2 1 0 10. Illustrate the water cycle and how climate, soil, and plants effect it
- 3 2 1 0 11. List and differentiate between micro and macro soil nutrients (S)
- 3 2 1 0 12. Outline the impact of soils on crop yields (S)
- 3 2 1 0 13. Identify various types of parent material types and soil forming factors

- 3 2 1 0 14. Describe methods of building soil fertility (S)
- 3 2 1 0 15. Explain considerations for determining N, P, and K for soil fertility and plant growth
- 3 2 1 0 16. Formulate the proper mix of dry fertilizer (M)

V. Plant Structures/Systems

- 3 2 1 0 1. Explain the process of translocation
- 3 2 1 0 2. Identify and describe the function of plant cell (S)
- 3 2 1 0 3. Identify the parts of monocot and dicot seeds and list their functions (S)
- 3 2 1 0 4. Distinguish between GMO and PLS plants and seeds
- 3 2 1 0 5. Describe methods of plant classification/nomenclature and the action of variation in natural selection(S)
- 3 2 1 0 6. Define how evapo-transpirations relates to plant growth
- 3 2 1 0 7. Define photoperiodism (S)
- 3 2 1 0 8. Explain the processes of photosynthesis, respiration, and transpiration as a cyclical growth representation (S, E)
- 3 2 1 0 11. Illustrate the sink/source of the complete carbon cycle
- 3 2 1 0 12. Illustrate the sink/source of the complete oxygen cycle
- 3 2 1 0 13. Discuss the means and effects of pollination
- 3 2 1 0 14. Relate the growing degree day concept to crop development
- 3 2 1 0 15. Understand how temperature is important in plant development and growth (cardinal temperatures)

VI. Weed, Disease, and Pest Control

- 3 2 1 0 1. Identify weed, disease, and pest damage (S)
- 3 2 1 0 2. Show disease material handling techniques (S)
- 3 2 1 0 3. Identify safe procedures when handling pesticides
- 3 2 1 0 4. Calculate pesticide application rates (M)
- 3 2 1 0 5. Identify the components of a pesticide label
- 3 2 1 0 6. Demonstrate how to mix pesticides (S)
- 3 2 1 0 7. Describe the general principles of IPM
- 3 2 1 0 8. Distinguish between resistance and tolerance
- 3 2 1 0 9. Recognize the differences in pesticide formulation from climatic conditions, using additives for drift or volatilization
- 3 2 1 0 10. Identify weeds from broadleaf and grass seedlings
- 3 2 1 0 11. Relate how weed life cycles differ from crop life cycles
- 3 2 1 0 12. Recognize the role of natural selection in disease, weed, and pest control in a cropping practice
- 3 2 1 0 13. Determine the best control measure for a given pest
- 3 2 1 0 14. Relate how insect behavior is linked with a cropping practice
- 3 2 1 0 15. Generate a list of beneficial insects and plants that counteract harmful weeds, diseases, and pests
- 3 2 1 0 16. Describe strategies needed for disease management
- 3 2 1 0 17. Explain the use of pesticides as a pest management strategy
- 3 2 1 0 18. Explain how stewardship, pesticide safety, and government regulation impact common cropping decisions
- 3 2 1 0 19. Understand how factors of pressure, speed, nozzle type, and spacing affect pesticide treatment success
- 3 2 1 0 20. Describe the effects of herbicide: adjuvants, contact, systemic

A. Lab Activities (L)

- 3 2 1 0 1. Locate PPE, REI, and Mixing instructions on a pesticide

VII. Genetics

- 3 2 1 0 1. Define the terms in their relationship with plant science and agriculture: hybrid, heterosis, homozygous, heterozygous, genotype, and phenotype (S)
- 3 2 1 0 2. Use and analyze a Punnet square (S)
- 3 2 1 0 3. Specify how the principles of genetics are used in plant and animal breeding programs (S)
- 3 2 1 0 4. Explain how hybrid plant varieties are developed (S)
- 3 2 1 0 5. Differentiate between dominant and recessive genes (S)
- 3 2 1 0 6. List examples of genetically engineered products (S)
- 3 2 1 0 7. Summarize laws and environmental/social concerns associated with genetic engineering (S)

A. Lab Activities (L)

- 3 2 1 0 1. Monitor phenotypes in a plant breeding program (S)
- 3 2 1 0 2. Research genetic engineering (S)

VIII. Fertilizer Applications

- 3 2 1 0 1. List characteristics of solid, gas, and liquid fertilizers
- 3 2 1 0 2. Understand the effects of starter fertilizer on crop growth and yield
- 3 2 1 0 3. Distinguish how fertilizer placement and time of application affect nutrient availability

IX. Crop Evaluation

- 3 2 1 0 1. Properly classify common crops and weeds
- 3 2 1 0 2. Describe standards used in USDA grain grading
- 3 2 1 0 3. Identify principles of irrigated water vs. dry land in crop growth, seed formation, and quality

A. Lab Activities (L)

- 3 2 1 0 1. Identify noxious weeds and their seeds
- 3 2 1 0 2. Identify restrictive weeds and their seeds
- 3 2 1 0 3. Identify common weeds and their seeds
- 3 2 1 0 4. Identify forage crops and their seeds
- 3 2 1 0 5. Identify grain crops and their seeds
- 3 2 1 0 6. Perform USDA Grain Grading (M)
- 3 2 1 0 7. Perform seed analysis

X. Biotechnology Issues

- 3 2 1 0 1. Access and review material from biotechnology firms; i.e. Monsanto, Pioneer, etc.
- 3 2 1 0 2. Discuss the most recent advances; i.e. Bt Corn, Round-Up Ready crops
- 3 2 1 0 3. Discuss moral issues in biotechnology and gene tampering
- 3 2 1 0 4. Discuss the role of biotechnology to improve plant genetics and production

XI. Crop Storage

- 3 2 1 0 1. Describe how temperature, aeration, pests, crop condition at harvest, length of storage, and additives influence crop quality
- 3 2 1 0 2. Discuss the difference between retained ownership and storage under warehouse receipt
- 3 2 1 0 3. Calculate volume of bins and storage areas
- 3 2 1 0 4. Calculate relative humidity, dew point, wet/dry bulb temperature, and saturation point
- 3 2 1 0 5. Calculate moisture content, drying efficiency, and gas consumption for drying high moisture corn.

XII. Mathematics Career Development Skills (C)

- 3 2 1 0 1. Estimate, apply, and solve problems involving fractions, decimals, and percentages (M)
- 3 2 1 0 2. Translate written and verbal statements into math expressions (M)
- 3 2 1 0 3. Convert common units of measurement within and/or across measurement systems (M)
- 3 2 1 0 4. Apply concepts of measurement such as distance, direction, rate, and time (M)
- 3 2 1 0 5. Construct or interpret tables, charts, maps, and/or graphs (M)
- 3 2 1 0 6. Decide whether a problem is best solved with a computer, calculator, paper, and pencil, or mental arithmetic techniques (M)

XIII. Communications Career Development Skills (C)

- 3 2 1 0 1. Follow oral instructions (E)
- 3 2 1 0 2. Participate in group communication activities (E)
- 3 2 1 0 3. Give oral directions (E)
- 3 2 1 0 4. Use language and format appropriate to the subject matter, purpose, and audience (E)

XIV. Other Career Development Skills (C)

- 3 2 1 0 1. Set priorities that several tasks will be accomplished (C)
- 3 2 1 0 2. Utilize time management to reduce conflicts (C)
- 3 2 1 0 3. Apply rules including punctuality, attendance, and work ethic (C)
- 3 2 1 0 4. Access and use information to develop educational and career options (C)
- 3 2 1 0 5. Demonstrate stress management skills (C)

XV. Computer Literacy (C)

- 3 2 1 0 1. Define, understand, and use common computer technology terms (C)
- 3 2 1 0 2. Compose, organize, and edit information using a computer (C)
- 3 2 1 0 3. Use presentation software to design and create a presentation (C)
- 3 2 1 0 4. Use agricultural related software/websites (C)
- 3 2 1 0 5. Access, navigate, and use on-line services (C)
- 3 2 1 0 6. Send and receive email messages with enclosures (C)
- 3 2 1 0 7. Use Quicken to manage personal finance (C)
- 3 2 1 0 8. Use Microsoft Office (Word, Excel, Powerpoint, and Internet Explorer) to complete projects (C)

XVI. LifeKnowledge Lessons

- 3 2 1 0 1. My decisions and the opinions of others (HS 20)
- 3 2 1 0 2. Critical thinking skills (HS 24)
- 3 2 1 0 3. The value of diversity on teams (HS 70)
- 3 2 1 0 4. Human potential (HS 100)

Kansas Agriculture Education

Name _____ SSN ____-____-_____

Instructor _____ School Year- _____

RATING SCALE: 3: Skilled, works independently
2: Competent, may need assistance
1: Received instruction, skill undeveloped
0: No exposure, instruction or training

INTEGRATION: (M) Math (S) Science
(E) Language Arts (L) Lab Activity
(C) Career Development Skill
(EB) Experienced Based
(LK) Life Knowledge

I. History and Careers in Plant Science

- 3 2 1 0 1. Investigate the diversity of careers in plant science
- 3 2 1 0 2. Attend job or career fields
- 3 2 1 0 3. Contact plant science professional organizations
- 3 2 1 0 4. Job shadow a professional in the plant industry
- 3 2 1 0 5. Create a timeline of the history of plant science, relating the past, present and future

II. Supervised Agriculture Experience (SAE) & Record Keeping

- 3 2 1 0 1. Identify and maintain the SAE (C)
- 3 2 1 0 2. Construct a personal budget (M)
- 3 2 1 0 3. Utilize the Kansas FFA SAE Record book to monitor the SAE (C)
- 3 2 1 0 4. Complete a local and district proficiency award applications (E)
- 3 2 1 0 5. Complete chapter and/or State FFA Degree applications (E)
- 3 2 1 0 6. Use Quicken to track income and expense in cash, checking, and savings (C)
- 3 2 1 0 7. Track SAE skills developed, hours worked as well as FFA, school, and community activities using the Ag Ed record book (C)
- 3 2 1 0 8. Set appropriate SAE long and short term goals (E)

A. Lab Activities (L)

- 3 2 1 0 1. Prepare income and expense records (C, M)
- 3 2 1 0 2. Prepare monthly cash flow statements (C, M)
- 3 2 1 0 3. Record personal and business inventories, assets, and liabilities (C, M)

III. The National FFA Organization and Leadership

- 3 2 1 0 1. Participate in Student Development activities established by the local POA established by the local POA

Plant & Soil Science - 18058

Enrollment Date _____ Completion Date _____ Hours completed _____
_____/_____/_____/_____/_____/_____

I certify that the student received the training in the area indicated.

Student Signature _____ Date _____

Instructor Signature _____ Date _____

Competencies ____/133

- 3 2 1 0 2. Participate in Chapter Development activities
- 3 2 1 0 3. Participate in Community Development activities established by the local POA
- 3 2 1 0 4. Research a 3-8 minute speech on an agricultural topic (E)
- 3 2 1 0 5. Write a final manuscript for a 3-8 minute speech over an agriculture topic using MLA style with title page and works cited (C, E)
- 3 2 1 0 6. Present a memorized 3-8 minute agriculture speech to the class (C, E)
- 3 2 1 0 7. Participate in the Agronomy Career Development Event (C)

IV. Basic soil properties and fertility(S)

- 3 2 1 0 1. Define soil texture and structure(S)
- 3 2 1 0 2. Use the textural triangle to identify classification(S)
- 3 2 1 0 3. Describe water holding capacity, available water, and wilting points, permeability, leaching are effected by soil texture and nutrient availability(S)
- 3 2 1 0 4. Perform and Interpret soil test data and give objective recommendations
- 3 2 1 0 5. Describe how mass flow, diffusion, and root interception affect nutrient uptake(S)
- 3 2 1 0 6. Illustrate the N-cycle and how climate, soil, and plants effect it(S)
- 3 2 1 0 7. Describe and distinguish between the different soil management practices in Ag
- 3 2 1 0 8. Describe how pH affects soil health and nutrient availability
- 3 2 1 0 9. Distinguish between point and non-point sources in the environment
- 3 2 1 0 10. Illustrate the water cycle and how climate, soil, and plants effect it
- 3 2 1 0 11. List and differentiate between micro and macro soil nutrients (S)
- 3 2 1 0 12. Outline the impact of soils on crop yields (S)
- 3 2 1 0 13. Identify various types of parent material types and soil forming factors

- 3 2 1 0 14. Describe methods of building soil fertility (S)
- 3 2 1 0 15. Explain considerations for determining N, P, and K for soil fertility and plant growth
- 3 2 1 0 16. Formulate the proper mix of dry fertilizer (M)

V. Plant Structures/Systems

- 3 2 1 0 1. Explain the process of translocation
- 3 2 1 0 2. Identify and describe the function of plant cell (S)
- 3 2 1 0 3. Identify the parts of monocot and dicot seeds and list their functions (S)
- 3 2 1 0 4. Distinguish between GMO and PLS plants and seeds
- 3 2 1 0 5. Describe methods of plant classification/nomenclature and the action of variation in natural selection(S)
- 3 2 1 0 6. Define how evapo-transpirations relates to plant growth
- 3 2 1 0 7. Define photoperiodism (S)
- 3 2 1 0 8. Explain the processes of photosynthesis, respiration, and transpiration as a cyclical growth representation (S, E)
- 3 2 1 0 11. Illustrate the sink/source of the complete carbon cycle(S)
- 3 2 1 0 12. Illustrate the sink/source of the complete oxygen cycle(S)
- 3 2 1 0 13. Discuss the means and effects of pollination(S)
- 3 2 1 0 14. Relate the growing degree day concept to crop development
- 3 2 1 0 15. Understand how temperature is important in plant development and growth (cardinal temperatures)(S)

VI. Weed, Disease, and Pest Control

- 3 2 1 0 1. Identify weed, disease, and pest damage (S)
- 3 2 1 0 2. Show disease material handling techniques (S)
- 3 2 1 0 3. Identify safe procedures when handling pesticides
- 3 2 1 0 4. Calculate pesticide application rates (M)
- 3 2 1 0 5. Identify the components of a pesticide label
- 3 2 1 0 6. Demonstrate how to mix pesticides (S)
- 3 2 1 0 7. Describe the general principles of IPM
- 3 2 1 0 8. Distinguish between resistance and tolerance
- 3 2 1 0 9. Recognize the differences in pesticide formulation from climatic conditions, using additives for drift or volatilization
- 3 2 1 0 10. Identify weeds from broadleaf and grass seedlings
- 3 2 1 0 11. Relate how weed life cycles differ from crop life cycles
- 3 2 1 0 12. Recognize the role of natural selection in disease, weed, and pest control in a cropping practice
- 3 2 1 0 13. Determine the best control measure for a given pest
- 3 2 1 0 14. Relate how insect behavior is linked with a cropping practice
- 3 2 1 0 15. Generate a list of beneficial insects and plants that counteract harmful weeds, diseases, and pests
- 3 2 1 0 16. Describe strategies needed for disease management
- 3 2 1 0 17. Explain the use of pesticides as a pest management strategy(EB)
- 3 2 1 0 18. Explain how stewardship, pesticide safety, and government regulation impact common cropping decisions
- 3 2 1 0 19. Understand how factors of pressure, speed, nozzle type, and spacing affect pesticide treatment success
- 3 2 1 0 20. Describe the effects of herbicide: adjuvants, contact, systemic(S)

A. Lab Activities (L)

- 3 2 1 0 1. Locate PPE, REI, and Mixing instructions on a pesticide

VII. Genetics

- 3 2 1 0 1. Define the terms in their relationship with plant science and agriculture: hybrid, heterosis, homozygous, heterozygous, genotype, and phenotype (S)
- 3 2 1 0 2. Use and analyze a Punnet square (S)
- 3 2 1 0 3. Specify how the principles of genetics are used in plant and animal breeding programs (S)
- 3 2 1 0 4. Explain how hybrid plant varieties are developed (S)
- 3 2 1 0 5. Differentiate between dominant and recessive genes (S)
- 3 2 1 0 6. List examples of genetically engineered products (S)
- 3 2 1 0 7. Summarize laws and environmental/social concerns associated with genetic engineering (S)

A. Lab Activities (L)

- 3 2 1 0 1. Monitor phenotypes in a plant breeding program (S)
- 3 2 1 0 2. Research genetic engineering (S)

VIII. Fertilizer Applications

- 3 2 1 0 1. List characteristics of solid, gas, and liquid fertilizers
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- 3 2 1 0 3. Identify principles of irrigated water vs. dry land in crop growth, seed formation, and quality

A. Lab Activities (L)(EB)

- 3 2 1 0 1. Identify noxious weeds and their seeds
- 3 2 1 0 2. Identify restrictive weeds and their seeds
- 3 2 1 0 3. Identify common weeds and their seeds
- 3 2 1 0 4. Identify forage crops and their seeds
- 3 2 1 0 5. Identify grain crops and their seeds
- 3 2 1 0 6. Perform USDA Grain Grading (M)
- 3 2 1 0 7. Perform seed analysis

X. Biotechnology Issues

- 3 2 1 0 1. Access and review material from biotechnology firms; i.e. Monsanto, Pioneer, etc.
- 3 2 1 0 2. Discuss the most recent advances; i.e. Bt Corn, Round-Up Ready crops
- 3 2 1 0 3. Discuss moral issues in biotechnology and gene tampering
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- 3 2 1 0 1. Describe how temperature, aeration, pests, crop condition at harvest, length of storage, and additives influence crop quality
- 3 2 1 0 2. Discuss the difference between retained ownership and storage under warehouse receipt
- 3 2 1 0 3. Calculate volume of bins and storage areas(M)
- 3 2 1 0 4. Calculate relative humidity, dew point, wet/dry bulb temperature, and saturation point (M)(S)
- 3 2 1 0 5. Calculate moisture content, drying efficiency, and gas consumption for drying high moisture corn.(M)(S)

XII. Mathematics Career Development Skills (C)

- 3 2 1 0 1. Estimate, apply, and solve problems involving fractions, decimals, and percentages (M)
- 3 2 1 0 2. Translate written and verbal statements into math expressions (M)
- 3 2 1 0 3. Convert common units of measurement within and/or across measurement systems (M)
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- 3 2 1 0 4. Use language and format appropriate to the subject matter, purpose, and audience (E)

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- 3 2 1 0 1. Set priorities that several tasks will be accomplished (C)
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- 3 2 1 0 3. Apply rules including punctuality, attendance, and work ethic (C)
- 3 2 1 0 4. Access and use information to develop educational and career options (C)
- 3 2 1 0 5. Demonstrate stress management skills (C)

XV. Computer Literacy (C)

- 3 2 1 0 1. Define, understand, and use common computer technology terms (C)
- 3 2 1 0 2. Compose, organize, and edit information using a computer (C)
- 3 2 1 0 3. Use presentation software to design and create a presentation (C)
- 3 2 1 0 4. Use agricultural related software/websites (C)
- 3 2 1 0 5. Access, navigate, and use on-line services (C)
- 3 2 1 0 6. Send and receive email messages with enclosures (C)
- 3 2 1 0 7. Use Quicken to manage personal finance (C)
- 3 2 1 0 8. Use Microsoft Office (Word, Excel, Powerpoint, and Internet Explorer) to complete projects (C)

XVI. LifeKnowledge Lessons(EB)

- 3 2 1 0 1. My decisions and the opinions of others (HS 20)
- 3 2 1 0 2. Critical thinking skills (HS 24)
- 3 2 1 0 3. The value of diversity on teams (HS 70)
- 3 2 1 0 4. Human potential (HS 100)

Agricultural Biotechnology-18308

Kansas Agricultural Education

Name: _____

Instructor: _____ School Year: _____

Hours Completed _____ Competencies Completed _____
Verification Signatures:

Student: _____ Date: _____

Instructor: _____ Date: _____

Key to Integrated Competencies

(CD)- Career Development

(L)- Leadership

(E) - Experienced Based

(LK) - LifeKnowledge Lessons

(LA) – Language Arts

(M) - Math

(S) – Science

(SS) – Social Science

Circle to indicate level of competency achieved:

3 - Skilled-Works Independently **2** Limited skill-Needs assistance

1 -Skill undeveloped-but received instruction

0 -No exposure

Biotechnology in Agriculture BS.01.01.

- 3 2 1 0 1. Define biotechnology and explore the historical impact it has had on agriculture.
- 3 2 1 0 2. Investigate current applications of biotechnology in agriculture.
- 3 2 1 0 3. Examine potential future applications of biotechnology in agriculture and compare them with alternative approaches to improving agriculture.

Regulatory Issues & Agencies BS.01.02.

- 3 2 1 0 1. Describe the role of agencies that regulate biotechnology.

Ethical, Legal, Social & Cultural Issues BS.01.03

- 3 2 1 0 1. Explore ethical, legal and social biotechnology related issues.
- 3 2 1 0 2. Explore the emergence, evolution and implications of bioethics.
- 3 2 1 0 3. Explain the meaning of intellectual properties as related to biotechnology.

Biotechnology Laboratory Records BS.02.01.

- 3 2 1 0 1. Maintain a biotechnology laboratory notebook.

Operate Laboratory Equipment BS.02.02.

- 3 2 1 0 1. Operate basic laboratory equipment and measurement devices.

Procedure Using Biological Materials BS.02.03.

- 3 2 1 0 1. Demonstrate basic aseptic techniques in the biotechnology laboratory.
- 3 2 1 0 2. Perform procedures with biological materials according to directions.

Safely Manage Biological Materials BS.02.04.

- 3 2 1 0 1. Prepare simple chemical solutions using standard operating procedures.
- 3 2 1 0 2. Identify and describe hazards associated with biological and chemical materials.
- 3 2 1 0 3. Maintain a safe environment by properly identifying and disposing of laboratory waste.

Perform a Variety of Procedures BS.02.05.

- 3 2 1 0 1. Differentiate the types of organisms and demonstrate how to handle them safely.
- 3 2 1 0 2. Explain the structures of DNA and RNA and how genotype influences phenotype.
- 3 2 1 0 3. Extract and purify DNA and RNA.
- 3 2 1 0 4. Perform simple enzyme activity assays to detect proteins,
- 3 2 1 0 5. Describe how antibodies are formed and how they can be used in biotechnology applications.
- 3 2 1 0 6. Explain reasons for detecting microbes and identify sources of microbes.

Genetic Engineering Improve Products BS.03.01.

- 3 2 1 0 1. Explain biological, social, agronomic and economic reasons for genetic modification of eukaryotes.
- 3 2 1 0 2. Describe enzymes, the changes they cause in foods and the physical and chemical parameters that affect enzymatic reactions.
- 3 2 1 0 3. Compare and contrast the use of natural organisms and genetically engineered organisms in the treatment of wastes.

- 3 2 1 0 4. Describe the benefits and risks associated with the use of biotechnology to increase productivity and improve quality of aquatic species.

Perform Biotechnology Processes BS.03.02.

- 3 2 1 0 1. Explain the functions of hormones in animals.
- 3 2 1 0 2. Identify foods produced through fermentation.
- 3 2 1 0 3. Explain the process of fermentation.
- 3 2 1 0 4. Explain the process of transesterification.
- 3 2 1 0 5. Explain the process of methanogenesis.

Monitor & Evaluate Procedures BS.03.03.

- 3 2 1 0 1. Describe the selective plant breeding process.
- 3 2 1 0 2. Describe biotechnology processes applicable to animal health.
- 3 2 1 0 3. Give examples of instances in which bioremediation can be applied to clean up environmental contaminants.
- 3 2 1 0 4. Explain the use of microorganisms in biological waste management.
- 3 2 1 0 5. Explain the role of microorganisms in industrial chemical waste treatment.
- 3 2 1 0 6. Explain the global importance of biodiversity.
- 3 2 1 0 7. Explain the consequences of agricultural practices on wild populations

- 3 2 1 0 8. Explain biomass and sources of biomass.
- 3 2 1 0 9. Define industrial biotechnology, and describe the benefits and risks associated with its use in the manufacturing of fabrics, plastics and other products.

Accounting (A)

1 Semester / .5 Credit (Minimum)

SCED: 12104

Technical-level course for Finance Career Cluster

Accounting courses introduce and expand upon the fundamental accounting principles and procedures used in businesses. Course content typically includes the full accounting cycle, payroll, taxes, debts, depreciation, ledger and journal techniques, and periodic adjustments. Students may learn how to apply standard auditing principles and to prepare budgets and final reports. Calculators, electronic spreadsheets, or other automated tools are usually used. Advanced topics may include elementary principles of partnership and corporate accounting and the managerial uses of control systems and the accounting process.

Utilize accounting tools-strategies-and systems to maintain-monitor-control-and plan the use of financial resources

Classify-record-and summarize financial data

Discuss the nature of the accounting cycle

Demonstrate the effects of transactions on the accounting equation

Prepare a chart of accounts

Use T accounts

Record transactions in a general journal

Post journal entries to general ledger accounts

Prepare a trial balance

Journalize and post adjusting entries

Journalize and post closing entries

Prepare a post-closing trial balance

Prepare work sheets

Discuss the nature of annual reports

Discuss the use of financial ratios in accounting

Determine business liquidity

Calculate business profitability

Prepare income statements

Prepare balance sheets

Maintain cash controls.

Explain cash control procedures--e.g. signature cards-deposit slips- internal/external controls-cash clearing-etc

Prove cash

Journalize/post entries to establish and replenish petty cash

Journalize/post entries related to banking activities

Explain the benefits of electronic funds transfer

Prepare bank deposits

Prepare purchase requisitions

Prepare purchase orders

Prepare sales slips

Prepare invoices

Perform accounting functions specific to a merchandising business.

Explain the nature of special journals

Record transactions in special journals

Perform accounts payable functions to a merchandising business

Explain the nature of accounts payable

Maintain a vendor file

Analyze purchase transactions

Post to an accounts payable subsidiary ledger

Prepare a credit memorandum for returned goods

Process invoices for payment

Process accounts payable checks

Prepare an accounts payable schedule

Perform accounts receivable functions to a merchandising business

Explain the nature of accounts receivable

Maintain a customer file for accounts receivable

Analyze sales transactions

Post to an accounts receivable subsidiary ledger

Process sales orders and invoices

Process sales returns and allowances

Process customer payments

Prepare customer statements

Process uncollectible accounts

Prepare an accounts receivable schedule

Determine uncollectible accounts receivable

Maintain inventory records to track the location-quantity and value of current assets

Record inventory usage

Process invoice of inventory

Process results of inventory

Process inventory adjustments

Determine the cost of inventory

Complete payroll procedures to calculate-record-and distribute payroll earnings

Calculate time cards

Maintain employee earnings records

Calculate employee earnings - e.g. gross earnings - net pay

Calculate employee-paid withholdings

Prepare a payroll register

Record the payroll in the general journal

Complete payroll tax expense forms

Prepare federal-state-and local payroll tax reports

Accounting (B)

1 Semester / .5 Credit (Minimum)

SCED: 12104

Technical-level course for Finance Career Cluster

Accounting courses introduce and expand upon the fundamental accounting principles and procedures used in businesses. Course content typically includes the full accounting cycle, payroll, taxes, debts, depreciation, ledger and journal techniques, and periodic adjustments. Students may learn how to apply standard auditing principles and to prepare budgets and final reports. Calculators, electronic spreadsheets, or other automated tools are usually used. Advanced topics may include elementary principles of partnership and corporate accounting and the managerial uses of control systems and the accounting process.

Perform accounting functions specific to a partnership

- Analyze a partnership agreement
- Allocate profits and losses to the partners
- Prepare a statement of partners' equities
- Prepare a balance sheet for a partnership

Perform accounting functions specific to a partnership

- Explain the nature of special journals
- Record transactions in special journals

Perform accounts payable functions to a partnership

- Explain the nature of accounts payable
- Maintain a vendor file
- Analyze purchase transactions
- Post to an accounts payable subsidiary ledger
- Prepare a credit memorandum for returned goods
- Process invoices for payment
- Process accounts payable checks
- Prepare an accounts payable schedule

Perform accounts receivable functions to a partnership

- Explain the nature of accounts receivable
- Maintain a customer file for accounts receivable

Analyze sales transactions
Post to an accounts receivable subsidiary ledger
Process sales orders and invoices
Process sales returns and allowances
Process customer payments
Prepare customer statements
Process uncollectible accounts
Prepare an accounts receivable schedule
Determine uncollectible accounts receivable

Determine suitable internal accounting controls to ensure the proper recording of financial transactions

Explain the purpose of internal accounting controls
Determine the components of internal accounting control procedures
Maintain internal accounting controls

Access- process- maintain- evaluate- and disseminate financial information to assist business decision-making

Utilize accounting technology
Integrate technology into accounting

Utilize career planning concepts- tools- and strategies to explore- obtain- and develop in an accounting career

Describe careers in accounting
Explore accounting licensing and certification programs
Discuss the significance of responsibility in accounting
Describe Generally Accepted Accounting Principles -- GAAP

Food Science II -18317

Kansas Agricultural Education

Name: _____

Instructor: _____ School Year: _____

Hours Completed _____ Competencies Completed _____
Verification Signatures:

Student: _____ Date: _____

Instructor: _____ Date: _____

Key to Integrated Competencies

(CD)- Career Development

(L)- Leadership

(E) - Experienced Based

(LK) - LifeKnowledge Lessons

(LA) – Language Arts

(M) - Math

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Circle to indicate level of competency achieved:

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Changes & Trends FFP.01.01.

- 3 2 1 0 1. Evaluate changes and trends in the food products and processing industry.
- 3 2 1 0 2. Predict trends and implications in the food products and processing industry.
- 3 2 1 0 3. Determine appropriate industry response to consumer concerns to assure a safe and wholesome food supply.

Outreach & Relations FFP.01.02.

- 3 2 1 0 1. Evaluate the changes in the food products and processing industry brought about by industry organizations or regulatory agencies.
- 3 2 1 0 2. Interact effectively with organizations, groups and regulatory agencies that affect the food products and processing industry.
- 3 2 1 0 3. Prepare a plan for implementation of industry standards in food products and processing programs.

Manage Operational Procedures FFP.02.01.

- 3 2 1 0 1. Evaluate the SSOP of a food products and processing company.
- 3 2 1 0 2. Develop SSOP for a food products and processing company.
- 3 2 1 0 3. Evaluate the GMP of a food products and processing company.
- 3 2 1 0 4. Implement GMP for a food products and processing company.

- 3 2 1 0 5. Perform basic equipment and facility maintenance in a food products and processing operation.

Implement HACCP Procedures FFP.02.02

- 3 2 1 0 1. Outline procedures to eliminate possible contamination hazards associated with food products and processing.
- 3 2 1 0 2. Analyze the effectiveness of a food products and processing company's Critical Control Point (CCP) procedures.
- 3 2 1 0 3. Implement an HACCP program for a food products and processing facility.

Safety & Sanitation Procedures FFP.02.03.

- 3 2 1 0 1. Demonstrate approved food product handling techniques.
- 3 2 1 0 2. Interpret quality-assurance test results and apply corrective procedures.
- 3 2 1 0 3. Explain the importance of microbiological tests in food product preparation, listing common spoilage and pathogenic microorganisms.
- 3 2 1 0 4. Conduct and interpret microbiological tests for food-borne pathogens and implement corrective procedures.
- 3 2 1 0 5. Demonstrate proper record keeping in a food products and processing system.

Demonstrate Worker Safety Procedures FFP.02.04

- 3 2 1 0 1. Evaluate a facility to determine the implementation of safety procedures.

Applying Principles of Science FFP.03.01

- 3 2 1 0 1. Design a research project in food science using the scientific method.
- 3 2 1 0 2. Conduct research in food science and interpret results to improve food products.
- 3 2 1 0 3. Explain how the chemical and physical properties of foods influence nutritional value and eating quality.
- 3 2 1 0 4. Determine and chemical and physical properties of food products.
- 3 2 1 0 5. Compare and contrast the nutritive value of food and food groups.
- 3 2 1 0 6. Design a daily food guide for a healthful diet.
- 3 2 1 0 7. Compare and contrast food constituents and their relative value to product taste, appearance, ect.
- 3 2 1 0 8. Analyze food products to identify food constituents.
- 3 2 1 0 9. Formulate and explain incorporation of additives into food products.
- 3 2 1 0 10. Prepare and label foods according to the established standards of regulatory agencies.
- 3 2 1 0 11. Plan and create a new food product.
- 3 2 1 0 12. Perform sensory-testing and marketing functions to characterize and determine consumer preference and market potential.

Quality Food Products FFP.04.01.

- 3 2 1 0 1. Assign quality and yield grades to food products according to industry standards.
- 3 2 1 0 2. Perform quality-control inspections of raw food products for processing.
- 3 2 1 0 3. Implement procedures to maintain original food quality and yield.
- 3 2 1 0 4. Compare and contrast accepted animal treatment and harvesting techniques.
- 3 2 1 0 5. Harvest animals using regulatory-agency-approved or industry-approved techniques.
- 3 2 1 0 6. Explain desirable and undesirable characteristics of both pre-mortem and post-mortem animals in relation to the production of food products.
- 3 2 1 0 7. Conduct pre-mortem and post-mortem inspections of animals.

Processed Food Products FFP.04.02.

- 3 2 1 0 1. Evaluate, grade and classify processed meat, egg, poultry, fish and dairy products.
- 3 2 1 0 2. Discuss desirable qualities of processed meat, egg, poultry, fish and dairy products.
- 3 2 1 0 3. Discuss desirable qualities of fruits and vegetables.
- 3 2 1 0 4. Discuss desirable qualities of grains, legumes and oilseeds.
- 3 2 1 0 5. Evaluate, grade and classify processed products from fruits and vegetables.
- 3 2 1 0 6. Evaluate, grade and classify finished products derived from grains, legumes and oilseeds.

Sale & Distribution FFP.04.030

- 3 2 1 0 1. Weigh and measure food products and perform conversions between units of measure.
- 3 2 1 0 2. Use weights and measures to formulate and package food products.
- 3 2 1 0 3. Prepare foods for sale and distribution as fresh-food products.
- 3 2 1 0 4. Evaluate foods prepared for the fresh-food market based on factors such as

shelf life, shrinkage, appearance and weight.

- 3 2 1 0 5. Explain the processes of food preservation methods.
- 3 2 1 0 6. Preserve foods using various methods and techniques.
- 3 2 1 0 7. Demonstrate techniques of preparing ready-to-eat food products.
- 3 2 1 0 8. Evaluate ready-to-eat food products.
- 3 2 1 0 9. Select and utilize packaging materials in storing processed foods and raw food products.
- 3 2 1 0 10. Analyze the foods stored in various packaging materials to determine which materials retain desirable food qualities.
- 3 2 1 0 11. Select methods and conditions for storing raw and processed food products.
- 3 2 1 0 12. Compare and contrast foods stored under varying conditions for quality, shelf life and intended use.

Ag Leadership & Communications

Kansas Agricultural Education 18203

Verification Signatures

Hours Completed _____

Student: _____ Date: _____

Instructor: _____ Date: _____

Name: _____

Instructor: _____ Year _____

Key to Integrated Competencies (CD) Career Development, (L) Leadership, (E) Experienced Based, (LK) Life Knowledge Lessons, (LA) Language Arts, (M) Math, (S) Science, (SS) Social Science

Circle to indicate level of competency achieved:

3 Skilled – Works Independently

2 Limited Skill – Needs Assistance

1 Skill Undeveloped – but Received Instruction

0 No Exposure

Leadership in Agriculture

- 3 2 1 0 1. Analyze various definitions of leadership
- 3 2 1 0 2. Discuss the contributions of agriculture education and the FFA to leadership development
- 3 2 1 0 3. Evaluate myths about leaders and leadership
- 3 2 1 0 4. Identify various agriculture leaders in the community
- 3 2 1 0 5. Identify opportunities for leadership in various agriculture careers and the workplace

Self Esteem

- 3 2 1 0 1. Analyze how self-esteem influences individual behavior.
- 3 2 1 0 2. Identify experiences that help develop self-esteem.
- 3 2 1 0 3. Identify the external and internal factors that affect self-esteem
- 3 2 1 0 4. Demonstrate how leaders can raise the self-esteem of others

Time Management

- 3 2 1 0 1. Develop and demonstrate time management
- 3 2 1 0 2. Develop a daily schedule.
- 3 2 1 0 3. Complete a time demand survey.
- 3 2 1 0 4. Identify personal priorities.
- 3 2 1 0 5. Create a "to do" list and identify time wasting habits.

Leading Teams and Groups

- 3 2 1 0 1. Explain the importance of leading teams
- 3 2 1 0 2. Examine how to organize groups
- 3 2 1 0 3. Analyze the five stages of group development
- 3 2 1 0 4. Describe various types and forms of group discussion
- 3 2 1 0 5. Demonstrate how to lead a group discussion (L,C)
- 3 2 1 0 6. Discuss the importance of delegation
- 3 2 1 0 7. Describe the dynamics of consensus building
- 3 2 1 0 8. Identify the various techniques in enhancing group activities (E)

Decision Making/Problem Solving

- 3 2 1 0 1. Explain the importance of problem solving and decision making
- 3 2 1 0 2. Differentiate between the terms problem, problem solving, and decision making
- 3 2 1 0 3. Identify and utilize steps of problem solving strategies.
- 3 2 1 0 4. Role play problem solving situations.

Goals

- 3 2 1 0 1. Define vision statements, long and short term goal setting and strategic action steps.
- 3 2 1 0 2. Create their own personal vision statements.
- 3 2 1 0 3. Students will write and evaluate goal statements.

- 3 2 1 0 4. Write and analyze strategic action steps.

Effective Communication

- 3 2 1 0 1. Recognize the different forms of communication
- 3 2 1 0 2. Identify and practice listening skills.
- 3 2 1 0 3. Identify and discuss non-verbal communication.
- 3 2 1 0 4. Develop verbal communication skills.
- 3 2 1 0 5. Practice the use of all forms of communication.
- 3 2 1 0 6. Compose a letter using proper business letter formatting
- 3 2 1 0 7. Paraphrase a phone message to convey the reason for the call

Workplace Communication

- 3 2 1 0 1. Prepare and practice job interviews.
- 3 2 1 0 2. Complete a conflict resolution exercise.
- 3 2 1 0 3. Practice proper telephone etiquette.
- 3 2 1 0 4. Write a job resume.
- 3 2 1 0 5. Demonstrate proper use of communication technology (phone, fax, e-mail).
- 3 2 1 0 6. Identify appropriate methods of communicating feelings and/or ideas.
- 3 2 1 0 7. Accept and provide criticism in an appropriate manner.

Stress Management

- 3 2 1 0 1. Identify and discuss peer pressure.

- 3 2 1 0 3. Recognize differences between good and bad stress.
- 3 2 1 0 4. Practice relaxation techniques.
- 3 2 1 0 5. Complete a stress test.
- 3 2 1 0 6. Identify and list personal stressors.

Conflict Resolution

- 3 2 1 0 1. Interpret the causes of conflict.
- 3 2 1 0 2. Discuss how conflict can be positive.
- 3 2 1 0 3. Identify and demonstrate conflict handling styles, i.e., manage/resolve.
- 3 2 1 0 4. Practice using creative conflict.
- 3 2 1 0 5. Learn about compromise and demonstrate its use.
- 3 2 1 0 6. Outline personal procedures to manage and handle conflict.
- 3 2 1 0 7. Identify and discuss contributions of different cultures.
- 3 2 1 0 8. Identify cultures within a community and school.
- 3 2 1 0 9. Assess the implications of peoples' perceptions and prejudices upon different cultures
- 3 2 1 0 10. Compare similarities and differences between past and present generations.
- 3 2 1 0 11. Compare similarities and differences between genders.

Ethics

- 3 2 1 0 1. Define ethics.
- 3 2 1 0 2. Describe and practice ways to impart proper ethics to others.
- 3 2 1 0 3. Manage situations in which ethics are in conflict

- 3 2 1 0 4. Identify, evaluate and clarify personal codes of ethics.
- 3 2 1 0 5. Take actions based on their personal codes of ethics.

Prepared and Extemporaneous Speaking

- 3 2 1 0 1. Identify characteristics of a good speech (E)
- 3 2 1 0 2. Research and prepare an outline of a speech over an agricultural topic (E)
- 3 2 1 0 3. Write and present a speech on an agriculture topic (E)
- 3 2 1 0 4. Discuss the advantages and disadvantages to extemporaneous speaking
- 3 2 1 0 5. Develop strategies for researching an agricultural extemp speech (E)
- 3 2 1 0 6. Discuss strategies for time management in preparing an agricultural extemp speech
- 3 2 1 0 7. Discuss the use of note cards in an extemp speech (E)
- 3 2 1 0 8. Deliver an agricultural extemp speech to the class (E,L)
- 3 2 1 0 9. Answer questions about your speech after delivery (E,L)

Parliamentary Procedure

- 3 2 1 0 1. Describe the purposes of par-law
- 3 2 1 0 2. Understand the chairpersons role in conducting the meeting
- 3 2 1 0 3. Understand ranking order of motions
- 3 2 1 0 4. Understand functions of motions on the FFA list

- 3 2 1 0 5. Identify privileged, main, subsidiary, incidental & unclassified motions
- 3 2 1 0 6. Demonstrate proper use of parliamentary motions

FFA

- 3 2 1 0 1. Participate in related CDEs (L)
- 3 2 1 0 2. Develop and publish a chapter newsletter
- 3 2 1 0 3. Plan FFA week activities
- 3 2 1 0 4. Complete the National Chapter Award Application

SAE

- 3 2 1 0 1. Develop goals and future SAE plans
- 3 2 1 0 2. List steps for improving the SAE
- 3 2 1 0 3. Make arrangement for SAE visit by instructor
- 3 2 1 0 4. Apply for individual awards

Research in Agriculture-18206

(Pathways in Agriculture, Food and Natural Resources Mgmt)

Kansas Agriculture Education

Name: _____

Instructor: _____ School Year: _____

Verification Signatures

Hours Completed 140 hrs/1 Credit

Student: _____ Date: _____

Instructor: _____ Date: _____

Key to Integrated Competencies

(A)- Academic {AC – Communications/English, AM-Math, AS-Science}

((CD)–Career Development (E)–Experience-Based (L)–Leadership (LK)–LifeKnowledge

Circle to indicate level of competency achieved:

3 Skilled-Works Independently

2 Limited skill-Needs assistance

1 Skill undeveloped-but received instruction

0 No exposure

Pathway Focus (CD)

(Circle one of the following)

Animal Systems

Plant Systems

Agribusiness Systems

Power and Technical Systems

Natural Resource Systems

Current Issues/Current Events

- 3 2 1 0 1. Stay up to date on current agriculture events
3 2 1 0 2. Research current issues affecting the agriculture industry (LK, E)

Positive and Negative Perspectives of Agriculture

- 3 2 1 0 1. Research outlooks and perspectives on the agriculture industry different than your own (AC, LK)
3 2 1 0 2. Participate in a class debate over an agricultural issue (AC)

Getting the Job

- 3 2 1 0 1. Revise your Resume (AC, CD, LK)
3 2 1 0 2. Write a cover letter (AC, CD, LK)
3 2 1 0 3. Complete a job application (AC, CD, LK)
3 2 1 0 4. Participate in a job interview (AC, CD, LK)
3 2 1 0 5. Write a follow-up letter (AC, CD, LK)

Furthering your Education

- 3 2 1 0 1. Research and compare at least 3 different colleges or technical programs to further education in your pathway (CD, LK)
3 2 1 0 2. Brainstorm strategies to ensure success in your future education (CD, LK)
3 2 1 0 3. Apply for College Scholarships (E)

- 3 2 1 0 4. Complete the FAFSA Financial Aid Form (AC, AM)

Life Long Learning/Professional Organizations in Agriculture

- 3 2 1 0 1. Explore learning opportunities outside of traditional college experience (E)
3 2 1 0 2. Find learning opportunities within professional organizations relating to your pathway (E)
3 2 1 0 3. Conduct an interview with a local member of a professional organization in agriculture (AC, E)

Business Etiquette

- 3 2 1 0 1. Illustrate proper telephone and cell phone etiquette (AC, CD, LK)
3 2 1 0 2. Utilize proper techniques in communicating via e-mail (AC, CD, LK)
3 2 1 0 3. Write a formal business letter of request (AC, CD, LK)
3 2 1 0 4. Write a formal thank you letter (AC, CD, LK)
3 2 1 0 5. Use proper table and dining etiquette techniques (LK)

Career Opportunities in Agriculture

- 3 2 1 0 1. Explore unfamiliar jobs relating to your career pathway (E)
3 2 1 0 2. Research and report on the job outlook for career opportunities in your pathway (AC)
3 2 1 0 3. Select, schedule and complete 1 job shadowing experience in your career pathway each semester (E)

Location(s): _____

Career Development in Agriculture

- 3 2 1 0 1. Prepare for a FFA career development event relating to your pathway (E)
3 2 1 0 2. Participate in a FFA career development event relating to your pathway at a high level (E)

Public Speaking/Group Presentations

- 3 2 1 0 1. Research a 3-8 minute speech on an agricultural topic (E)
3 2 1 0 2. Write a final manuscript for a 3-8 minute speech over an agriculture topic using MLA style with title page and works cited (AC, CD)
3 2 1 0 3. Present a memorized 3-8 minute agriculture speech to the class (AC, L, CD)
3 2 1 0 4. Lead a class discussion over a topic (AC)
3 2 1 0 5. Lead a small group discussion (AC)
3 2 1 0 6. Teach a technical concept to the class (AC, LK)

Technology in Agriculture

- 3 2 1 0 1. Report on uses of global positioning systems (GPS) in agriculture (E)
3 2 1 0 2. Utilize a GPS receiver to find a location given coordinates (E, AC)
3 2 1 0 3. Design a webpage for an agricultural business using Dreamweaver or iWeb (E)
3 2 1 0 4. Explore uses of Blogging, Podcasting and other new information technology's in the agriculture industry (AC)
3 2 1 0 5. Research online marketing opportunities and strategies for agricultural products (E)

Government Regulations

- 3 2 1 0 1. Identify Common Safety Concerns/Issues relating to your pathway (CD)
- 3 2 1 0 2. Explore government regulations and paperwork required for different agricultural business (CD)
- 3 2 1 0 3. Complete a state and federal income tax return (CD, AM, E)

Technical Agriculture

- 3 2 1 0 1. Select 5 knowledge and skill statements from your pathway to learn more about during this course.
- a. _____
- _____
- b. _____
- _____
- c. _____
- _____
- d. _____
- _____
- e. _____
- _____
- 3 2 1 0 2. Develop a plan, define learning objective, and decide on an assessment method for the 5 outcomes selected above.

Advanced Agricultural Lab Activity

- 3 2 1 0 1. Select and develop outcomes for an advanced agriculture laboratory activity for the first semester (E)
- _____
- _____
- 3 2 1 0 2. Select and develop outcomes for an advanced agriculture laboratory activity for the second semester (E)
- _____
- _____

Options Include, but are not limited to:

- a. Animal Systems – Dissect a Fetal Pig, Develop a feed ration, conduct a food related research project, etc.

- b. Plant Systems – Conduct a research project in the greenhouse, learn and perform an advanced floral design, design and install a landscape plan, etc.
- c. Agribusiness Systems – Develop a Marketing Plan for a Product, Learn to use quickbooks to manage business financial records, develop and perform a sales presentation, etc.
- d. Power & Tech – Develop advanced skills in the Ag Mech Shop, develop blueprints or project plans, design an construct a small project to be sold, etc
- e. Natural Resource – Conduct an environmental research project, monitor water quality of a local stream or watershed, develop a presentation and plan to improve wildlife habitat in an area, etc

Computer Literacy (CD)

- 3 2 1 0 1. Define, understand, and use common computer technology terms (CD)
- 3 2 1 0 2. Compose, organize, and edit information using a computer (CD)
- 3 2 1 0 3. Use presentation software to design and create a presentation (CD)
- 3 2 1 0 4. Use ag related software/websites (CD)
- 3 2 1 0 5. Access, navigate,& use on-line services (CD))
- 3 2 1 0 6. Use Microsoft Office (Word, Excel, Powerpoint, and Internet Explorer) to complete projects (CD)

Work Ethics (CD)

- 3 2 1 0 1. Apply employee rules, regulations, and policies including: (CD, LK)
- a. Punctuality and dependability
- b. Responsibility for the position
- c. Accuracy
- d. Efficiency
- 3 2 1 0 2. Understand and value effective work ethic attitudes and behaviors such as: (CD, LK)
- a. Acceptance of the job requirements
- b. Willingness to take initiative with new challenges
- c. Take responsibilities for decisions and actions

Supervised Agriculture Experience & Record Keeping

- 3 2 1 0 1. Complete Advanced SAE Learning Opportunities outlined on the SAE Grading Rubric
- 3 2 1 0 2. Utilize the Kansas FFA SAE Record book & Quicken to monitor the SAE (CD)
- 3 2 1 0 3. Complete a local and district proficiency award application (L, AM, AC)
- 3 2 1 0 4. Complete a State FFA Degree Applications (L, AM, AC)
- 3 2 1 0 5. Use Quicken to track income and expense in cash, checking, and savings (CD, AM)
- 3 2 1 0 6. Track SAE skills developed, hours worked as well as FFA, School, and community activities using the Ag Ed record book. (CD)
- 3 2 1 0 7. Evaluate and revise appropriate long and short-term goals for the SAE program. (LK)

Rating Scale: 3 Mastery of subject matter
 2 Limited mastery of subject matter
 1 Non mastery of subject matter
 0 No exposure to subject matter

Competencies: (M) Math Competency
 (C) English Competency-Communications
 (S) Science Competency
 (W) Career Development Skills

Directions: Evaluate the student by checking the appropriate number to indicate the degree of competency reached. Rate each task to reflect employability readiness.

Enrollment Date___/___/___	Completion Date___/___/___	Hours Completed_____
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I certify that the student received training in the areas indicated.

Student Signature_____ Date___/___/___

Instructor Signature_____ Date___/___/___

Administrator Signature_____ Date___/___/___

034.. FFA AND LEADERSHIP

- 3 2 1 0 1. Assist in the planning of the Program of Activities. (W)
- 3 2 1 0 2. Maintain a record of Leadership Activities in the FFA Record Book. (W)
- 3 2 1 0 3. Participate in chapter meetings. (W, C)
- 3 2 1 0 4. Plan, organize, and oversee chapter fund raising activities. (W, M)
- 3 2 1 0 5. Organize and submit a chapter proficiency award. (W, C)
- 3 2 1 0 6. Assist in filling out chapter award application. (W, C)
- 3 2 1 0 7. Participate in an FFA Career Development Event. (W)
- 3 2 1 0 8. Assist in developing FFA programs for the chapter. (W)
- 3 2 1 0 9. Develop human relation competencies. (W, C)
- 3 2 1 0 10. Develop communication competencies (W, C)

035. SAE

- 3 2 1 0 1. Record and evaluate FFA Record Book. (M, W)
- 3 2 1 0 2. Examine goals and future SAEP plans. (W, C)
- 3 2 1 0 3. Identify and evaluate career opportunities and possibilities. (W, C)
- 3 2 1 0 4. Make arrangements for a SAE visitation by the instructor. (W, C)

. CAREER DEVELOPMENT SKILLS

036. Listening Skills

- 3 2 1 0 1. Listen and interpret oral instruction (W, C)
- 3 2 1 0 2. Analyze speaker's point of view (W, C)
- 3 2 1 0 3. Draw conclusion or make generalization from communication (W, C)
- 3 2 1 0 4. Reduce interferences that would impede effective listening (W, C)

037. Oral Communications

- 3 2 1 0 1. Organize notes and ideas for formal and informal presentations (C, W) L3A
- 3 2 1 0 2. Prepare and deliver a presentation appropriate to subject matter, purpose and audience (C, W) L3B
- 3 2 1 0 3. Give oral directions (C, W) L3A
- 3 2 1 0 4. Demonstrate job interview skills (C, W) L4D

038. Mathematics

- 3 2 1 0 1. Estimate, apply, and solve problems involving fractions, decimals, percentages, and real numbers (M, W)
- 3 2 1 0 2. Decide whether a problem situation is best solved using a computer, calculator, paper and pencil or mental arithmetic/estimation techniques (M, W)
- 3 2 1 0 3. Convert common units of measurements (M, W)

- 3 2 1 0 4. Construct and interpret tables, charts, maps, and/or graphs (M, W)
- 3 2 1 0 5. Apply measurement concepts of distance, direction, rate, time, and acceleration (M, W)
- 3 2 1 0 6. Interpret measure of mean, median, mode and variance (M, W)

039. Writing

- 3 2 1 0 1. Use language, organization, and format appropriate to the subject matter, purpose, and audience (C, W)L3A
- 3 2 1 0 2. Check, edit, and revise for correct information, appropriate emphasis, grammar, spelling, and punctuation (C, W)
- 3 2 1 0 3. Compile and maintain records, logs, lab notebooks, and other documents (C, W)
- 3 2 1 0 4. Use software to prepare documentation and reference lists (C, W)

040. Computer Literacy

- 3 2 1 0 1. Define, understand, and use computer technology (W)
- 3 2 1 0 2. Use presentation and multimedia software to design/create a variety of presentation (C, W)
- 3 2 1 0 3. Select and use subject-specific and industry-specific software (W)

- 3 2 1 0 4. Send and receive E-mail messages, voice messages, and faxes (W)

041. Human Relation Skills

- 3 2 1 0 1. Perform self assessments (personal goals, standards and values, needs/wants, strengths/weaknesses, and interests/ talents) (C, W)
- 3 2 1 0 2. Demonstrate characteristics of positive self concept (C, W)
- 3 2 1 0 3. Demonstrate interpersonal (C, W)

042. Decision Making/Problem Solving

- 3 2 1 0 1. Describe the factors that impact decision making (needs/wants, values, goals, and standards) (W)
- 3 2 1 0 2. Distinguish between types of decisions (economical, technical, and social) (W)
- 3 2 1 0 3. Utilizing problem solving skills:
- Identify the problem
 - Define critical issue
 - Analyze causes of problem
 - Utilize research and assessment skills
 - Examine results of a problem
 - Offer solutions to a problem
 - Select a solution to a problem
 - Implement an action plan

043. Teamwork

- 3 2 1 0 1. Participate in team tasks and goals (C, W)
- 3 2 1 0 2. Reconcile disputes and disagreements (C, W)
- 3 2 1 0 3. Respond positively to ideas and suggestions (C, W)
- 3 2 1 0 4. Express agreements or neutrality (C, W)
- 3 2 1 0 5. Demonstrate conflict resolution skills (C, W)
- 3 2 1 0 6. Express disagreements diplomatically (C, W)

044. Resource Management

- 3 2 1 0 1. Locate information and select the materials, tools, equipment, or other

resources to perform the activities needed to accomplish a specific task (C, W)

- 3 2 1 0 2. Determine cost, time, and resources needed to complete a task within an industry or occupation (W)
- 3 2 1 0 3. Explain the differences between setting goals and managing money (M, W)
- 3 2 1 0 4. Identify fixed and flexible expenses (M, W)

045. Time Management

- 3 2 1 0 1. Set priorities or the order in which several tasks will be accomplished (W)
- 3 2 1 0 2. Develop strategies to overcome procrastination and meet deadlines (W)
- 3 2 1 0 3. Create time plan for solving problems (W)
- 3 2 1 0 4. Demonstrate stress management skills (W)

046. Work Ethics

- 3 2 1 0 1. Interpret standards workplace policies related to: (C, W)L10A
- Safety
 - Personal hygiene
 - Personal discipline
 - Substance abuse
 - Employee theft
 - Sexual harassment
 - Causes for termination/legal action
- 3 2 1 0 2. Apply employee rules, regulations, and policies (W) L8A
- 3 2 1 0 3. Understand and value effective work ethic, attitudes, and behavior (W)L8A
- 3 2 1 0 4. Compare and complete various examples of job applications (C, W)L10A
- 3 2 1 0 5. Maintain an openness to lifelong learning (W)L10C
- 3 2 1 0 6. Create a portfolio or other means that display academic and technical skills.L10C

047. Career Planning

- 3 2 1 0 1. Access and use information to develop educational and career option (W) L10B
- 3 2 1 0 2. Participate in career exploration activities (W)L10A
- 3 2 1 0 3. Apply self-assessment skills to the career decision-making process (W)L10B
- 3 2 1 0 4. Recognize potential impact of career choice on family and personal life (W)L10C

IV. CAREER PLACEMENT OPPORTUNITIES

048. Agri-Business

Management/Marketing/Sales

- 3 2 1 0 1. Identify career opportunities (W)
- 3 2 1 0 2. Identify and develop a training plan (C, W)
- 3 2 1 0 3. Identify and evaluate wages, taxes, and fringe benefits (W)
- 3 2 1 0 4. Understand and distinguish differences between economic systems (C, W)
- 3 2 1 0 5. Recognize and develop a business organization plan (W)
- 3 2 1 0 6. Develop person organizational plan (W)
- 3 2 1 0 7. Recognize and distinguish different sale procedures (W)
- 3 2 1 0 8. Identify and understand different marketing strategies (W)
- 3 2 1 0 9. Understand concepts of customer credit/loans (W)

049. Livestock Industry/Marketing

- 3 2 1 0 1. Identify career opportunities (W)
- 3 2 1 0 2. Identify and utilize strategies to improve herd health and production (W)
- 3 2 1 0 3. Understand differences in marketing strategies (W)
- 3 2 1 0 4. Identify and distinguish livestock illnesses and deficiencies (W)
- 3 2 1 0 5. Identify and determine nutritional requirements for livestock (W)
- 3 2 1 0 6. Calculate feed rations for peak livestock production (M,W)

C050. Veterinary Science

- 3 2 1 0 1. Identify career opportunities (W)
- 3 2 1 0 2. Distinguish special care differences between livestock and small animals (W)
- 3 2 1 0 3. Identify basic illness and deficiencies with livestock and/or small animals (W)

051. Agricultural Mechanics

- 3 2 1 0 1. Identify career opportunities (W)
- 3 2 1 0 2. Identify and follow safety practices (W)
- 3 2 1 0 3. Understand principles of 2 and 4 stroke engines (W)
- 3 2 1 0 4. Identify engine parts and functions (W)
- 3 2 1 0 5. Understand electrical, fuel, lubrication, and cooling systems in agricultural machinery (W)
- 3 2 1 0 6. Perform basic maintenance on agricultural machinery (W)
- 3 2 1 0 7. Read, interpret, and utilize operating and repair manuals (C, W)

E053. Metal Fabrication

- 3 2 1 0 1. Identify career opportunities (W)
- 3 2 1 0 2. Identify and follow safety practices (W)
- 3 2 1 0 3. Perform welds with Arc, MIG, and TIG welders (W)
- 3 2 1 0 4. Perform cuts and welds with Oxy-acetylene units (W)
- 3 2 1 0 5. Perform cuts with plasma-arc machine (W)
- 3 2 1 0 6. Perform bends with metal break (W)

053. Meat Fabrication

- 3 2 1 0 1. Identify career opportunities
- 3 2 1 0 2. Recognize and cut wholesale, primal, and retail cuts from beef, pork, and/or lamb (W)
- 3 2 1 0 3. Determine yield and quality grades of beef (M, W)
- 3 2 1 0 4. Practice safety and sanitation practices (W)
- 3 2 1 0 5. Perform cuts with meat band-saw and cutter (W)

054. Agricultural Journalism

- 3 2 1 0 1. Identify career opportunities (W)
- 3 2 1 0 2. Perform proper communication techniques (grammar, editing, and writing) (C, W)
- 3 2 1 0 3. Demonstrate and perform proper interview techniques (C, W)
- 3 2 1 0 4. Develop and utilize inter-personal and communication skills (C, W)

055. Floriculture/Nursery Landscape

- 3 2 1 0 1. Identify career opportunities (W)
- 3 2 1 0 2. Identify and understand soil/water nutrients and requirements (W)
- 3 2 1 0 3. Read, understand, and utilize landscaping blueprints (C, W)
- 3 2 1 0 4. Design a set of landscaping blueprints (C, W)
- 3 2 1 0 5. Perform transplanting (W)

056. Agronomy/Crops

- 3 2 1 0 1. Identify common Kansas crops and weeds.(W)
- 3 2 1 0 2. Perform conservation tillage.(W)
- 3 2 1 0 3. Calculate fertilizer applications(W)
- 3 2 1 0 4. Calculate seeding rates(W)
- 3 2 1 0 5. Harvest crops. (W)
- 3 2 1 0 6. Select and apply herbicides and pesticides. (W)

**KANSAS HIGH SCHOOL CAREER & TECHNICAL EDUCATION
INSTRUCTOR VISIT OBSERVATION REPORT
18050**

Student _____ Experience _____
Type/Site _____

Supervisor _____
Instructor _____

1. *A well-planned, student-managed work experience is in place that provides learning opportunities outside of scheduled class time. Learning opportunities relate to the student's future career success or to recent classroom instruction.*

_____ Exemplary _____ Exceeds Std. _____ Meets Std. _____ Struggling _____ Does not Exist
_____ N/A

Comments:

2. *For entrepreneurial experiences including but not limited to crop or livestock production, industry accepted best management practices are in place. Animals are in good health and are housed in acceptable facilities.*

_____ Exemplary _____ Exceeds Std. _____ Meets Std. _____ Struggling _____ Does not Exist
_____ N/A

Comments:

3. *The experience is conducted in a physically and emotionally safe working environment. The student is covered in case of accident by private health insurance, workman's compensation insurance or by other means.*

_____ Exemplary _____ Exceeds Std. _____ Meets Std. _____ Struggling _____ Does not Exist
_____ N/A

Comments:

4. *The Training Agreement was created by the student with guidance from the instructor, parent and employer (if applicable). Adequate new skill growth is demonstrated (usually includes mastery of five new skills per year or continuation until mastery is achieved)*

_____ Exemplary _____ Exceeds Std. _____ Meets Std. _____ Struggling _____ Does not Exist
_____ N/A

Comments:

5. *The student is exposed to a professional work environment.*

_____ Exemplary _____ Exceeds Std. _____ Meets Std. _____ Struggling _____ Does not Exist
_____ N/A

Comments:

6. *Financial records relating to the student's SAE are kept up to date and are accurate.*

_____ Exemplary _____ Exceeds Std. _____ Meets Std. _____ Struggling _____ Does not Exist
_____ N/A

Comments:

7. ***Adequate progress is clearly demonstrated towards meeting learning objectives outlined in the Training Agreement.***

_____ Exemplary _____ Exceeds Std. _____ Meets Std. _____ Struggling _____ Does not Exist
_____ N/A

Comments:

8. ***Specific, measurable, attainable, realistic and timely (SMART) goals were created at the beginning of the experience and are reviewed quarterly. Guidance is obtained from the instructor, parents and employer (if applicable). These goals are in addition to those listed on the Training Agreement and should include financial and personal goals relating to the experience.***

_____ Exemplary _____ Exceeds Std. _____ Meets Std. _____ Struggling _____ Does not Exist
_____ N/A

Comments:

9. ***Instruction is provided by the instructor, parent or employer (as applicable) continuously during the experience. Students are recognized for their accomplishments and are provided constructive criticism or special instruction as needed.***

_____ Exemplary _____ Exceeds Std. _____ Meets Std. _____ Struggling _____ Does not Exist
_____ N/A

Comments:

10. ***The student has shown significant growth over the course of the experience. Learning opportunities that last for greater than one year show significant progress towards attaining financial, personal and educational goals from year to year. New goals are set as old goals are reached.***

_____ Exemplary _____ Exceeds Std. _____ Meets Std. _____ Struggling _____ Does not Exist
_____ N/A

Comments:

11. ***Local, state and national CTSO award program applications (FFA Degrees, Proficiency Awards, Star Awards, etc.) are completed and submitted as appropriate. Student shows significant participation and growth in the CTSO.***

_____ Exemplary _____ Exceeds Std. _____ Meets Std. _____ Struggling _____ Does not Exist
_____ N/A

Comments:

General Skills Evaluation:

	Exceeds Job Requirements (Mastery)	Meets Job Requirements (Adequate)	Needs Improvement (Unacceptable)	Comments or Additional Instruction Needed
Dependable & Responsible				

Appearance				
Attitude, Judgment & Cooperation				
Performance of Duties/Desire to Learn				
Communicates Effectively & Appropriately				
Craftsmanship – The Continual Work Towards Perfection				

Strong Points:

Areas for Improvement:

Additional Instructor Comments:

Additional Supervisor Comments:

Additional Student or Parent Comments:

_____ <i>Employer</i>	<i>Date</i>

_____ <i>Student</i>	<i>Date</i>

_____ <i>Parent/Guardian</i>	<i>Date</i>

_____ <i>Coordinator/Instructor</i>	<i>Date</i>

Kansas Agriculture Education

Name _____ AS. SA. _____ SSN ____ - ____ - _____

Instructor _____

RATING SCALE: 3: Skilled, works independently
2: Competent, may need assistance
1: Received instruction, skill undeveloped
0: No exposure, instruction or training

INTEGRATION: (M) Math (S) Science
(E) Language Arts (C) Career Development Skill
(L) Life Activities

020.. Introduction to Small Animal Care

- 3 2 1 0 1. Describe the history of animals on the earth (S)
- 3 2 1 0 2. Order the important time periods in the evolution of animals (S)
- 3 2 1 0 3. Examine how animals probably became domesticated
- 3 2 1 0 4. Explain the importance of the small animal industry (C)
- 3 2 1 0 5. Explain how organisms are classified (S)

021.. Careers in Small Animal Care

- 3 2 1 0 1. Compare opportunities in small animal care and management (C)
- 3 2 1 0 2. Analyze the nature of the work, salaries, and requirements necessary for obtaining a job in the areas of small animal care (C)
- 3 2 1 0 3. Examine the careers available in the small animal care industry (C)
- 3 2 1 0 4. Select a career area and write a paper on why it interests you (C)
- 3 2 1 0 5. Write a letter of application to a job in the small animal care industry (E,C)
- 3 2 1 0 6. Develop a resume (E,C)
- 3 2 1 0 7. Prepare for a job interview by participating in a mock interview (C)

023.. Safety

- 3 2 1 0 1. Explain the importance of safety when working and playing with small animals
- 3 2 1 0 2. List ten types of diseases that can be transmitted from animals to humans (S)
- 3 2 1 0 3. Describe how to prevent becoming infected
- 3 2 1 0 4. Describe proper restraint procedures when working with small animals
- 3 2 1 0 5. Examine the proper methods of administering drugs to small animals
- 3 2 1 0 6. List guidelines for safety when handling dangerous chemicals and when working with small animals (S)
- 3 2 1 0 7. Research Lyme disease and present your findings to the class in a written report (E)

024. Small Animals as Pets

- 3 2 1 0 1. Discuss the questions a person should ask before buying a pet
- 3 2 1 0 2. Compare the different options available for obtaining a pet
- 3 2 1 0 3. Examine what is meant by responsible pet ownership
- 3 2 1 0 4. List the important lessons children can learn from their pets
- 3 2 1 0 5. Write a paper expressing your beliefs on euthanasia (E)
- 3 2 1 0 6. Analyze your personal situation and wants and make a list of pets that would fit your needs

Small Animal Care - 18102

Enrollment Date _____ Completion Date _____ Hours completed _____

I certify that the student received the training in the area indicated.

Student Signature _____ Date _____

Instructor Signature _____ Date _____

Administrator Signature _____ Date _____

025. Animal Rights and Welfare

- 3 2 1 0 1. Define the terms animal rights and animal welfare and be able to compare them
- 3 2 1 0 2. Identify important persons in the animal rights movement
- 3 2 1 0 3. Examine important dates and acts of legislation associated with animal welfare
- 3 2 1 0 4. Compare the issues concerning animal rights and animal welfare
- 3 2 1 0 5. Research the Animal Welfare Act and write a paper about the regulations that are covered under it (E)
- 3 2 1 0 6. Research the various groups and write letters to them requesting information, then discuss the information that is received (E)
- 3 2 1 0 7. Debate, pro or con, one of the four issues that were discussed in class

026. Nutrition and Digestive Systems

- 3 2 1 0 1. Define the terms nutrition and nutrients (S)
- 3 2 1 0 2. List the six basic nutrient groups (S)
- 3 2 1 0 3. Discuss the difference between the ruminant and nonruminant digestive systems (S)
- 3 2 1 0 4. Summarize the importance of the various nutrients in the diets of animals (S)
- 3 2 1 0 5. Compare ingredient tags from several different feeds and determine which feed is the best for certain situations (L)

027. Dogs

- 3 2 1 0 1. Examine the history of the dog
- 3 2 1 0 2. Compare the seven major groups of dogs
- 3 2 1 0 3. List the breeds that make up the seven major groups of dogs
- 3 2 1 0 4. Discuss the proper methods of feeding and exercising dogs
- 3 2 1 0 5. Analyze methods of training dogs
- 3 2 1 0 6. Explain the grooming of dogs
- 3 2 1 0 7. Examine the health care options for dogs
- 3 2 1 0 8. Research the various diseases of dogs and write a paper on one of them (E)
- 3 2 1 0 9. Decide what breed of dog you would like to own and present your decision to the class (L)
- 3 2 1 0 10. Calculate the costs of owning a dog for one year (M)

028. Cats

- 3 2 1 0 1. Examine the history of the cat
- 3 2 1 0 2. Arrange the major groups and breeds
- 3 2 1 0 3. Explain the proper methods of feeding cats
- 3 2 1 0 4. Examine the general grooming and health care of cats
- 3 2 1 0 5. Research one disease that affects cats and summarize it orally (E)
- 3 2 1 0 6. Decide what breed of cat you would like to own and present your decision to the class (L)

029. Miniature Livestock

- 3 2 1 0 1. Examine the animals that qualify as miniature livestock; pigs, goats, horses, donkeys, sheep, cattle
- 3 2 1 0 2. Compare the size of miniature livestock to their full-size counterparts
- 3 2 1 0 3. Explain the characteristics of each type of miniature livestock animal
- 3 2 1 0 4. Examine the housing and equipment requirements in order to properly own and care for miniature livestock
- 3 2 1 0 5. Analyze the nutritional requirements (S)
- 3 2 1 0 6. Compare the reproduction of miniature livestock to their full-sized counterparts
- 3 2 1 0 7. Examine the health concerns that affect miniature livestock
- 3 2 1 0 8. Discuss the handling of miniature livestock and disadvantages of owning the animal (E)

029.. Miniature Livestock (con't)

- 3 2 1 0 9. Analyze the behavior patterns of miniature livestock
- 3 2 1 0 10. Select one type of miniature livestock animal and write a report on the advantages (E)

030. Rabbits

- 3 2 1 0 1. Discuss the history of the rabbit
- 3 2 1 0 2. Examine uses for rabbits
- 3 2 1 0 3. Explain the five weight categories of rabbits
- 3 2 1 0 4. Examine the breeds of rabbits
- 3 2 1 0 5. Explain the housing and equipment needs of rabbits
- 3 2 1 0 6. Analyze the nutrient requirements of rabbits (S)
- 3 2 1 0 7. Research a diseases that affect rabbits and report your findings to the class (E)
- 3 2 1 0 8. Calculate the time it would take for rabbits to grow to five generations and the total number after 5 generations (S,M)
- 3 2 1 0 9. Apply the Punnet Square to determine the genetic probabilities (S)

031. Hamsters

- 3 2 1 0 1. Recognize and describe the common types of hamsters
- 3 2 1 0 2. List common management practices for maintaining health
- 3 2 1 0 3. Examine common diseases and ailments of hamsters
- 3 2 1 0 4. Demonstrate the proper care and handling of hamsters (L)

032. Gerbils

- 3 2 1 0 1. Describe the characteristics of gerbils
- 3 2 1 0 2. Explain practices for general care of gerbils
- 3 2 1 0 3. Examine the common diseases and ailments of gerbils

033. Rats

- 3 2 1 0 1. Discuss the history of the brown and black rat
- 3 2 1 0 2. Describe the characteristics of common rats
- 3 2 1 0 3. Explain the common methods of feeding and caring for rats
- 3 2 1 0 4. Examine common diseases and ailments of rats
- 3 2 1 0 5. Examine the use of rats in scientific research (S)

034. Mice

- 3 2 1 0 1. Discuss the history of the common house mouse
- 3 2 1 0 2. Describe the clan or colony structure of the house mouse
- 3 2 1 0 3. Examine practices for the general care of pet mice
- 3 2 1 0 4. List common feeds for mice
- 3 2 1 0 5. Describe the common methods of handling mice
- 3 2 1 0 6. Explain common diseases and ailments of pet mice
- 3 2 1 0 7. Examine the use of mice in scientific research
- 3 2 1 0 8. Conduct research on the rate of gain for different types of food (L,S,M)

035. Guinea Pig

- 3 2 1 0 1. Discuss the history of the guinea pig
- 3 2 1 0 2. List and describe the seven varieties of guinea pigs
- 3 2 1 0 3. Explain the practices for maintaining the good health of guinea pigs
- 3 2 1 0 4. Demonstrate how to pick up and handle a guinea pig (L)
- 3 2 1 0 5. Examine the common diseases and ailments of the guinea pig

036. Chinchillas

- 3 2 1 0 1. Discuss the history of the chinchilla
- 3 2 1 0 2. Compare and contrast the two species of chinchilla
- 3 2 1 0 3. Examine practices for care of chinchillas
- 3 2 1 0 4. Describe the methods of handling a chinchilla
- 3 2 1 0 5. Explain the common diseases and ailments of the chinchilla
- 3 2 1 0 6. Select a local store that sell chinchillas and calculate the cost of owning a chinchilla (M)

037. Ferrets

- 3 2 1 0 1. Discuss the history of the domestic ferret
- 3 2 1 0 2. Describe the various color patterns of ferrets
- 3 2 1 0 3. Explain the general care practices for ferrets
- 3 2 1 0 4. List the common feeds for ferrets
- 3 2 1 0 5. Describe the common diseases and ailments of ferrets
- 3 2 1 0 6. Research and write a report on the black-footed ferret (E)

038.. Amphibians

- 3 2 1 0 1. Explain the characteristics of amphibians
- 3 2 1 0 2. Compare the three orders of amphibians
- 3 2 1 0 3. Construct an aquatic, semiaquatic, and land habitat aquarium (L)
- 3 2 1 0 4. Examine the methods used in handling and feeding amphibians

039. Reptiles

- 3 2 1 0 1. Explain the characteristics of reptiles
- 3 2 1 0 2. Compare the four orders of reptiles
- 3 2 1 0 3. Describe the methods used in handling and feeding reptiles
- 3 2 1 0 4. Examine the housing and equipment needs of reptiles kept in captivity
- 3 2 1 0 5. Select a reptile and write a report on its characteristics and requirements of owning (E)

040. Birds

- 3 2 1 0 1. Discuss the characteristics of birds
- 3 2 1 0 2. Compare and contrast the different orders of birds discussed
- 3 2 1 0 3. Describe methods used in handling and feeding birds
- 3 2 1 0 4. Explain the various housing and equipment needs of birds in captivity
- 3 2 1 0 5. Examine the various diseases and ailments of birds
- 3 2 1 0 6. Prepare an incubator and properly manage it to hatch quail (L)
- 3 2 1 0 7. Demonstrate proper animal husbandry for quail (L)
- 3 2 1 0 8. Contact government agencies and compile a list of endangered, threatened, and extinct species of birds (L)

041. Fish

- 3 2 1 0 1. Examine the characteristics of fish
- 3 2 1 0 2. Compare the three classes of fish
- 3 2 1 0 3. Setup a freshwater and marine aquarium (L)
- 3 2 1 0 4. Analyze the feeding habits of fish
- 3 2 1 0 5. Explain the common diseases of fish

042. FFA

- 3 2 1 0 1. Present a 4-6 minute speech over a class related topic (L)
- 3 2 1 0 2. Participate in the FFA Speech CDE or Ag Issues CDE (L)

043. SAE (Supervised Agricultural Experience)

- 3 2 1 0 1. Develop goals and future SAE plans L2C
- 3 2 1 0 2. List steps for improving the SAE L6B
- 3 2 1 0 3. Make arrangement for SAE visit by instructor
- 3 2 1 0 4. Prepare a proficiency award application or State FFA Degree application L2E, L9A

Work Place Skills

044. Career Development

- 3 2 1 0 1. Compile a list of small animal science career areas.(LK HS 31)
- 3 2 1 0 2. Compose a letter of application and personal resume for a selected small animal science career. (LA) (LK HS 37)
- 3 2 1 0 3. Participate in mock interviews. (L, LA) (LK HS 38)
- 3 2 1 0 4. Develop a career path and identify the opportunities in that path. (CD) L10B
- 3 2 1 0 5. Identify, investigate and target a career choice.(CD)L10C
- 3 2 1 0 6. Apply for acceptance to further education in that career choice.(CD) L10C
- 3 2 1 0 7. Apply for FFA awards upon graduation and post graduation. L2E, L9A

045. Resource Management

- 3 2 1 0 1. Locate information and select the materials, tools, and equipment needed to perform an activity or build a project.(CD)
- 3 2 1 0 2. Determine cost, time, and resources needed to complete a task within an industry or occupation. (CD)
- 3 2 1 0 3. Explain the relationship between setting goals and managing money. (CD)
- 3 2 1 0 4. Identify fixed and flexible expenses. (CD)
- 3 2 1 0 5. Identify planned and impulse buying.

046. Oral Communications

- 3 2 1 0 1. Organize notes and ideas for formal, semiformal, and informal presentations.(L, LA) L3A
- 3 2 1 0 2. Prepare and deliver a presentation appropriate to subject matter, purpose, and audience. (L, LA) L3B
- 3 2 1 0 3. Use interviewing techniques to gather information. (L, LA, CD) L3A
- 3 2 1 0 4. Participate in group communication activities.(L) L3B
- 3 2 1 0 5. Incorporate visual media into a presentation. (L, LA) L4C
- 3 2 1 0 6. Demonstrate concise impromptu speaking skills.(L) L3C
- 3 2 1 0 7. Give oral directions.(L, LA) L1B
- 3 2 1 0 8. Demonstrate job interview skills. (L, LA) L1C

Agribusiness -18201

Kansas Agricultural Education

Hours Completed _____ Competencies Completed _____
 Verification Signatures:

Student: _____ Date: _____

Instructor: _____ Date: _____

Name: _____

Instructor: _____ School Year: _____

Key to Integrated Competencies

(CD)- Career Development

(L)- Leadership

(E) - Experienced Based

(LK) - LifeKnowledge Lessons

(LA) – Language Arts

(M) - Math

(S) – Science

(SS) – Social Science

Circle to indicate level of competency achieved:

3 - Skilled-Works Independently **2** Limited skill-Needs assistance

1 -Skill undeveloped-but received instruction

0 -No exposure

Principles of Capitalism ABS.01.01.

- 3 2 1 0 1. Recognize principles of capitalism as related to AFNR businesses.

Principles of Entrepreneurship ABS.01.02.

- 3 2 1 0 1. Describe the meaning, importance and economic impact of entrepreneurship.

Compose & Analyze Business Plan ABS.02.01.

- 3 2 1 0 1. Recognize quality AFNR business plan components that have been developed using the SMART (specific, measurable, attainable, realistic and timely) format.
- 3 2 1 0 2. Identify and observe ethical standards in planning and operating AFNR businesses.

Mission Statement ABS.02.02.

- 3 2 1 0 1. Read and interpret mission statements.
- 3 2 1 0 2. Identify the meaning and importance of goals and objectives in AFNR business enterprises.

Management Skills ABS.02.03

- 3 2 1 0 1. Identify organizational structures and chains of command in AFNR businesses.
- 3 2 1 0 2. Identify appropriate local, state, federal, international and industry regulations for AFNR businesses.

Human Resources ABS.02.04

- 3 2 1 0 1. Identify the meaning and functions of human resources in AFNR businesses.
- 3 2 1 0 2. Identify usual employee benefits in AFNR businesses.

- 3 2 1 0 3. Explain the meaning and importance of employee relations, including communication.

- 3 2 1 0 4. Identify the meaning and nature of employee compensation.

Effective Record Keeping ABS.03.01

- 3 2 1 0 1. Maintain production and agribusiness records.

Inventory Management ABS.03.02

- 3 2 1 0 1. Monitor inventory to maintain optimal levels and calculate costs of carrying input and output inventory.

Accounting Fundamentals ABS.04.01.

- 3 2 1 0 1. Budget resources, as applied to the AFNR business, including capital, human, financial and time.
- 3 2 1 0 2. Identify financial concepts associated with production and profit.
- 3 2 1 0 3. Explain the importance of return on investment for an agribusiness enterprise.

Financial Information ABS.05.01

- 3 2 1 0 1. Identify accounting information in AFNR business reporting and management.
- 3 2 1 0 2. Name and explain the impact of external economic factors on an AFNR business.
- 3 2 1 0 3. Identify information needed for an AFNR business manager to monitor performance on a daily, weekly, monthly, quarterly and annual basis.
- 3 2 1 0 4. Calculate percentages, ratios and related business applications.

Marketing & Marketing Research ABS.06.01.

- 3 2 1 0 1. Investigate the meaning and methods of marketing in AFNR as related to agricultural commodities, products and services and to agricultural goods in domestic and international markets.

- 3 2 1 0 2. Describe functions in agricultural marketing.

Develop a Marketing Plan ABS.06.02.

- 3 2 1 0 1. Identify the purpose, components and developmental processes of marketing plans.

Marketing Plan Implementation ABS.06.03.

- 3 2 1 0 1. Identify and use strategies frequently employed in marketing programs, including those used in niche markets.

Marketing AFNR Products/Services ABS.06.04.

- 3 2 1 0 1. Explain the meaning and use of the four Ps (product, place, price and promotion) in marketing.

Merchandising Products/Services ABS.06.05.

- 3 2 1 0 1. Identify, explain and organize components of the sales process.
- 3 2 1 0 2. Develop strategies to gain new customers.
- 3 2 1 0 3. Identify and maintain needed sales records.

Identifying Resources ABS.07.01.

- 3 2 1 0 1. Prepare a flowchart that shows production processes, including the resources needed for each step.

Production and Operational Plan ABS.07.02.

3 2 1 0 1. Identify the components of a production and operational plan.

3 2 1 0 2. Identify common resources needed to operate a production facility.

Evaluating a Business Plan ABS.07.03

3 2 1 0 1. Examine a business plan to identify inconsistencies and actions to correct inconsistencies.

Manage Risk and Uncertainty ABS.07.04

3 2 1 0 1. Determine the meaning and importance of risk and uncertainty with AFNR enterprises.

Name _____

School _____ Instructor _____

Circle to indicate level of competency achieved:

- 3 Skilled – works independently
- 2 Limited skill – needs assistance
- 1 Skill undeveloped – but received instruction
- 0 No exposure

Verification Signatures _____

HOURS COMPLETED _____

Student signature _____ Date _____

Instructor signature _____ Date _____

Key to Integrated Competencies/Foundation Skills

(CD) – Career Development (L) – Leadership (C) - Communications
(M) – Math (S) – Science (PS) Problem Solving (SA) Safety (E) Employability

I. FFA and Leadership (L)

- 3 2 1 0 1) Assist in the planning of the program of activities
- 3 2 1 0 2) Maintain a record of Leadership Activities in Record Book
- 3 2 1 0 3) Participate in chapter meetings
- 3 2 1 0 4) Plan, organize, and oversee chapter fund raising activities
- 3 2 1 0 5) Organize and submit a chapter proficiency application
- 3 2 1 0 6) Assist in filling out chapter award applications
- 3 2 1 0 7) Participate in an FFA Contest
- 3 2 1 0 8) Assist in developing FFA programs for the chapter
- 3 2 1 0 9) Develop human relation competencies
- 3 2 1 0 10) Develop communication competencies

II. SAE

- 3 2 1 0 1) Record and evaluate recordbook in the following areas: SAE Plans and Accomplishments, Ag Mechanics Activities, Ag Science Activities, Ag Business Activities, Income, Business Expense, Cash Flow, Inventories, and Enterprises records (access available to put on computer)
- 3 2 1 0 2) Examine goals and future SAE plans
- 3 2 1 0 3) Identify and evaluate career opportunities and possibilities
- 3 2 1 0 4) Make arrangements for a SAE visitation by the instructor

III. SOILS

Soils and Land

- 3 2 1 0 1) Identify soil types and profiles (S,L)
- 3 2 1 0 2) Utilize soil survey and (M,L,S)
- 3 2 1 0 3) Explain land classes 1-8 (S)
- 3 2 1 0 4) Illustrate the water cycle (S)
- 3 2 1 0 5) Analyze types of erosion (S)
- 3 2 1 0 6) Apply knowledge in contest (L,S)
- 3 2 1 0 7) Define terms associated with legal land description
- 3 2 1 0 8) Locate the principal meridians and base lines when drawn on a map of Kansas
- 3 2 1 0 9) Identify the proper section number within a township
- 3 2 1 0 10) Interpret a legal land description by determining the number of acres involved (M)
- 3 2 1 0 11) Identify the exact location of a given piece of rural property using legal description

Conservation Planning, Lane Use, Measurement and Leveling

- 3 2 1 0 12) Set up and level the instrument
- 3 2 1 0 13) Use the hand level
- 3 2 1 0 14) Take rod readings (M)
- 3 2 1 0 15) Measure distance with tape instruments (M)
- 3 2 1 0 16) Lay out contour lines (M)
- 3 2 1 0 17) Determine direction by use of a compass (M)
- 3 2 1 0 18) Record field notes for differential, profile, and topographic leveling (M)
- 3 2 1 0 19) Lay out grade stakes for cut/fills (M)

- 3 2 1 0 20) Determine soil types and select appropriate structures or practices

IV. MEAT and CARCASS EVALUATION

Introduction

- 3 2 1 0 1) Distinguish between inspection and grading
- 3 2 1 0 2) List sequences of fat deposition (S)
- 3 2 1 0 3) Correlate fat deposition to growth curve (S)
- 3 2 1 0 4) Compare the purposes of quality and yield grades (S)
- 3 2 1 0 5) Identify factors used to calculate quality and yield grades of beef, lamb and port (M,L)
- 3 2 1 0 6) Correlate values to yield and quality grades (M,L)

Yield Grading Beef Carcasses

- 3 2 1 0 7) Measure backfat thickness (M,L)
- 3 2 1 0 8) Convert backfat thickness to PYG (M,L)
- 3 2 1 0 9) Adjust PYG for unusual amounts of fat (M,L)
- 3 2 1 0 10) Measure rib-eye area with dog grid (M,L)
- 3 2 1 0 11) Estimate rib-eye area within 1" (M,L)
- 3 2 1 0 12) Determine carcass weight (M,L)
- 3 2 1 0 13) Determine required rib-eye area (M,L)
- 3 2 1 0 14) Calculate internal fat adjustment to PYG (M,L)
- 3 2 1 0 15) Determine final yield grade
- 3 2 1 0 16) Sight grade carcasses to nearest full grade (M,L)

Quality Grading Beef Carcasses

- 3 2 1 0 17) Identify marbling degrees in each grade (M,L)
- 3 2 1 0 18) Determine marbling scores (M,L)

Kansas Agriculture Education

- 3 2 1 0 19) Determine skeletal maturity (S,L)
- 3 2 1 0 20) Determine lean maturity (L)
- 3 2 1 0 21) Balance skeletal and lean maturity (S,L)
- 3 2 1 0 22) Apply maturity and marbling scores to quality grade chart (M,L)
- 3 2 1 0 23) Determine final quality grade to nearest 1/3 grade (M,L)

Wholesale Cut Evaluation

- 3 2 1 0 24) Identify Primals of beef, port, and lamb (L,S)
- 3 2 1 0 25) Identify visible bones and major muscles (S,L)
- 3 2 1 0 26) Identify yield factors that influence value (M,L)
- 3 2 1 0 27) Identify quality factors that influence value (M,L)
- 3 2 1 0 28) Rank primals by yield and quality criteria (M,L)

Retail Cut Utilization

- 3 2 1 0 29) Identify meat palpability factors (S,L)
- 3 2 1 0 30) Identify variations in palpability
- 3 2 1 0 31) Identify methods of handling collagen (S,L)
- 3 2 1 0 32) Identify major cooking methods

Retail Cut Identification

- 3 2 1 0 33) Identify major round bones of skeleton (S,L)
- 3 2 1 0 34) Identify major flat bones of skeleton (S,L)
- 3 2 1 0 35) Identify major irregular bones and skeleton (S,L)
- 3 2 1 0 36) Identify unique muscle patterns (S,L)
- 3 2 1 0 37) Identify unique fat characteristics (S,L)

Determine how major retail cuts are taken from:

- 3 2 1 0 38) Beef chuck
- 3 2 1 0 39) Beef rib
- 3 2 1 0 40) Beef loin
- 3 2 1 0 41) Beef round
- 3 2 1 0 42) Beef flank
- 3 2 1 0 43) Beef plate
- 3 2 1 0 44) Beef brisket
- 3 2 1 0 45) Port Boston butt
- 3 2 1 0 46) Pork picnic
- 3 2 1 0 47) Pork loin
- 3 2 1 0 48) Pork ham
- 3 2 1 0 49) Lamb shoulder
- 3 2 1 0 50) Lamb rack

- 3 2 1 0 51) Lamb loin
- 3 2 1 0 52) Lamb leg
- 3 2 1 0 53) Distinguish between species (S,L)
- 3 2 1 0 54) Identify variety meats

V. Ag Sales

- 3 2 1 0 1. Understand the sales process as it relates to agribusiness.
- 3 2 1 0 2. Develop the ability to use advertising and promotion to sell agriculture products.
- 3 2 1 0 3. Develop the ability to build customer confidence in the sales person, the product, and the business.
- 3 2 1 0 4. Use market research data to set realistic goals for reaching the right customers.
- 3 2 1 0 5. Develop the skills necessary to conduct research on agriculture sales careers and to develop strategies for seeking employment.
- 3 2 1 0 6. Demonstrate the ability to set up and handle an interview for a professional position in the agricultural sales field.
- 3 2 1 0 7. Identify career options in agricultural sales and determine the specific entry requirements for a chosen field.
- 3 2 1 0 8. Develop skills in working as part of a team or a group. (C)
- 3 2 1 0 9. Develop an overview of the vast field of agricultural product marketing.
- 3 2 1 0 10. Improve written communication skills. (C)
- 3 2 1 0 11. Improve oral presentation skills. (C)
- 3 2 1 0 12. Develop computer skills.
- 3 2 1 0 13. Bring it all together by going on to compete in the FFA Agricultural Sales Career Development Event. (C)

VI. Plant Growth Processes

- 3 2 1 0 1. Explain and describe the process of photosynthesis (S: 3.1.4)
- 3 2 1 0 2. Explain the environmental factors that affect photosynthesis (S: 3.5.2)
- 3 2 1 0 3. Describe the process of respiration (S: 3.5.3)
- 3 2 1 0 4. Explain the environmental factors that affect respiration (S)

Advanced Plant and Animal Science

- 3 2 1 0 5. Explain the processes of translocation and transpiration (S)
- 3 2 1 0 6. Explain the environmental factors that affect transpiration (S)
- 3 2 1 0 7. Discuss the process of nutrient absorption (S)
- 3 2 1 0 8. Relate environmental factors that affect plant growth (S)
- 3 2 1 0 9. Describe geotropism and photoperiodism in horticulture (S)
- 3 2 1 0 10. List plant growth regulators used in horticulture (S)
- 3 2 1 0 11. Explain how plant growth regulators affects the activity of plant metabolism (S)
- 3 2 1 0 12. Predict and manipulate the results of photoperiodism and plant growth regulators (S)
- 3 2 1 0 13. Utilize USDA Hardiness Zones in plant selection

VII. Plant Genetics

- 3 2 1 0 1. Explain the relationship between DNA, genes and alleles (S:3.2.1)
- 3 2 1 0 2. Identify dominant and recessive genes and homozygous and heterozygous combinations (S:3.2.1, 3.2.3)
- 3 2 1 0 3. Apply fundamentals of Mendalian genetics (S: 3.2.1, 3.2.3)
- 3 2 1 0 4. Predict genotypic and phenotypic combinations using a punnet square (S: 3.2.1, 3.2.3)
- 3 2 1 0 5. Identify biotechnology applications in the Horticulture industry (M, S: 5.1.1)
- 3 2 1 0 6. Differentiate between mitosis and meiosis cell division (S: 3.2.4)

Kansas Agriculture Education

Advanced Plant and Animal Science

ACADEMIC COMPETENCIES

LANGUAGE ARTS

ALL (C)

VIII. Oral Communications

- 3 2 1 0 1) Answer questions in formal and informal situations
- 3 2 1 0 2) Present findings of capstone projects in a formal presentation using appropriate graphics, media, and support materials.

IX. Written Communications

- 3 2 1 0 1) Use a wide variety of references and resources (both electronic and printed) for the purpose of writing business documents
- 3 2 1 0 2) Write formal and informal reports using suitable format supported by appropriate graphic aids
- 3 2 1 0 3) Prepare industry-specific technical reports which incorporate graphic aids

Mathematical Skills and Concepts (All M)

X. STATISTICS & PROBABILITY

- 3 2 1 0 1) Construct, read, and interpret tables, charts, and graphs
- 3 2 1 0 2) Make inferences about data from tables, charts, and graphs
- 3 2 1 0 3) Estimate and calculate measures of central tendency (mean, median, mode)
- 3 2 1 0 4) Use probability concepts to represent and solve problems involving uncertainty

XI. MATH APPLICATIONS

- 3 2 1 0 5) Calculate gross earnings (e.g., salary, hourly rate, commission, or production)
- 3 2 1 0 6) Calculate income and expenses for a given time period
- 3 2 1 0 7) Calculate inventory turnover at cost and at retail for a given period.

XII. Listening Skills

- 3 2 1 0 1) Draw conclusions or make generalizations from another's oral communication
- 3 2 1 0 2) Analyze a speaker's point of view
- 3 2 1 0 3) Restate or paraphrase a conversation to confirm what was said
- 3 2 1 0 4) Reduce barriers (or interference) that may impede effective listening

XIII. Teamwork

- 1) Build group consensus:
 - 3 2 1 0 a. Clarify statements
 - 3 2 1 0 b. Reconcile disputes and disagreements
 - 3 2 1 0 c. Propose alternative plans for action
 - 3 2 1 0 d. Respond positively to ideas and suggestions
- 3 2 1 0 e. Express agreement or neutrality
- 3 2 1 0 f. Demonstrate conflict resolution skills
- 3 2 1 0 g. Express disagreement diplomatically

XIV. Time Management

- 3 2 1 0 1) Identify influences on use of time
- 3 2 1 0 2) Set priorities or the order in which several tasks will be accomplished
- 3 2 1 0 3) Identify and control personal "time wasters"
- 3 2 1 0 4) Develop strategies to overcome procrastination and meet deadlines
- 3 2 1 0 5) Estimate the time required to perform activities needed to accomplish a specific task
- 3 2 1 0 6) Create a time plan for solving a problem

XV. Work Ethics

- 1) Apply employee rules, regulations, and policies in a given occupational area, including:
 - 3 2 1 0 a. Punctuality and dependability
 - 3 2 1 0 b. Responsibility for position
 - 3 2 1 0 c. Accuracy
 - 3 2 1 0 d. Cost effectiveness
- 2) Understand and value effective work ethic attitudes:
 - 3 2 1 0 a. Acceptance of the job requirements
 - 3 2 1 0 b. A willingness to take initiative with new challenges

- 3 2 1 0 c. Take responsibility for decisions and actions
- 3) Interpret standard workplace policies related to:
 - 3 2 1 0 a. safety
 - 3 2 1 0 b. personal hygiene
 - 3 2 1 0 c. personal discipline (personal leave and absence)
 - 3 2 1 0 d. substance abuse
 - 3 2 1 0 e. employee theft
 - 3 2 1 0 f. sexual harassment
 - 3 2 1 0 g. causes for termination/legal actions
- 3 2 1 0 4) Demonstrate personal characteristics that lead to job satisfaction.
- 3 2 1 0 5) Maintain an openness to lifelong learning

XVI. CAREER PLANNING (CD, E)

- 3 2 1 0 1) Access and use information to develop educational and career options
- 3 2 1 0 2) Participate in career exploration activities
- 3 2 1 0 3) Recognize potential impact of career choice on family and personal life
- 3 2 1 0 4) Identify roles and responsibilities of a leader in relation to one's own

STUDENT NAME: _____

Have 80% of these competencies been mastered? Y N

Teacher signature: _____

CAREER DEVELOPMENT SKILLS (CD, E)

Agriculture, Food & Natural Resources

Adv. Internship – 18049

- Rating Scale:** 3 Mastery of subject matter
2 Limited mastery of subject matter
1 Non mastery of subject matter
0 No exposure to subject matter

- Competencies:** (M) Math Competency
(C) English Competency-Communications
(S) Science Competency
(W) Career Development Skills

Directions: Evaluate the student by checking the appropriate number to indicate the degree of competency reached. Rate each task to reflect employability readiness.

Enrollment Date ____/____/____	Completion Date ____/____/____	Hours Completed _____
I certify that the student received training in the areas indicated.		
Student Signature _____	Date ____/____/____	
Instructor Signature _____	Date ____/____/____	
Administrator Signature _____	Date ____/____/____	

034.. FFA AND LEADERSHIP

- 3 2 1 0** 1. Assist in the planning of the Program of Activities. (W)
3 2 1 0 2. Maintain a record of Leadership Activities in the FFA Record Book. (W)
3 2 1 0 3. Participate in chapter meetings. (W, C)
3 2 1 0 4. Plan, organize, and oversee chapter fund raising activities. (W, M)
3 2 1 0 5. Organize and submit a chapter proficiency award. (W, C)
3 2 1 0 6. Assist in filling out chapter award application. (W, C)
3 2 1 0 7. Participate in an FFA Career Development Event. (W)
3 2 1 0 8. Assist in developing FFA programs for the chapter. (W)
3 2 1 0 9. Develop human relation competencies. (W, C)
3 2 1 0 10. Develop communication competencies (W, C)

035. SAE

- 3 2 1 0** 1. Record and evaluate FFA Record Book. (M, W)
3 2 1 0 2. Examine goals and future SAEP plans. (W, C)
3 2 1 0 3. Identify and evaluate career opportunities and possibilities. (W, C)
3 2 1 0 4. Make arrangements for a SAE visitation by the instructor. (W, C)

. CAREER DEVELOPMENT SKILLS

036. Listening Skills

- 3 2 1 0** 1. Listen and interpret oral instruction (W, C)
3 2 1 0 2. Analyze speaker's point of view (W, C)
3 2 1 0 3. Draw conclusion or make generalization from communication (W, C)
3 2 1 0 4. Reduce interferences that would impede effective listening (W, C)

037. Oral Communications

- 3 2 1 0** 1. Organize notes and ideas for formal and informal presentations (C, W) L3A
3 2 1 0 2. Prepare and deliver a presentation appropriate to subject matter, purpose and audience (C, W) L3B
3 2 1 0 3. Give oral directions (C, W) L3A
3 2 1 0 4. Demonstrate job interview skills (C, W) L4D

038. Mathematics

- 3 2 1 0** 1. Estimate, apply, and solve problems involving fractions, decimals, percentages, and real numbers (M, W)
3 2 1 0 2. Decide whether a problem situation is best solved using a computer, calculator, paper and pencil or mental arithmetic/estimation techniques (M, W)
3 2 1 0 3. Convert common units of measurements (M, W)

- 3 2 1 0** 4. Construct and interpret tables, charts, maps, and/or graphs (M, W)
3 2 1 0 5. Apply measurement concepts of distance, direction, rate, time, and acceleration (M, W)
3 2 1 0 6. Interpret measure of mean, median, mode and variance (M, W)

039. Writing

- 3 2 1 0** 1. Use language, organization, and format appropriate to the subject matter, purpose, and audience (C, W) L3A
3 2 1 0 2. Check, edit, and revise for correct information, appropriate emphasis, grammar, spelling, and punctuation (C, W)
3 2 1 0 3. Compile and maintain records, logs, lab notebooks, and other documents (C, W)
3 2 1 0 4. Use software to prepare documentation and reference lists (C, W)

040. Computer Literacy

- 3 2 1 0** 1. Define, understand, and use computer technology (W)
3 2 1 0 2. Use presentation and multimedia software to design/create a variety of presentation (C, W)
3 2 1 0 3. Select and use subject-specific and industry-specific software (W)
3 2 1 0 4. Send and receive E-mail messages, voice messages, and faxes (W)

041. Human Relation Skills

- 3 2 1 0** 1. Perform self assessments (personal goals, standards and values, needs/wants, strengths/weaknesses, and interests/ talents) (C, W)
- 3 2 1 0** 2. Demonstrate characteristics of positive self concept (C, W)
- 3 2 1 0** 3. Demonstrate interpersonal (C, W)

042. Decision Making/Problem Solving

- 3 2 1 0** 1. Describe the factors that impact decision making (needs/wants, values, goals, and standards) (W)
- 3 2 1 0** 2. Distinguish between types of decisions (economical, technical, and social) (W)
- 3 2 1 0** 3. Utilizing problem solving skills:
 - a. Identify the problem
 - b. Define critical issue
 - c. Analyze causes of problem
 - d. Utilize research and assessment skills
 - e. Examine results of a problem
 - f. Offer solutions to a problem
 - g. Select a solution to a problem
 - h. Implement an action plan

043. Teamwork

- 3 2 1 0** 1. Participate in team tasks and goals (C, W)
- 3 2 1 0** 2. Reconcile disputes and disagreements (C, W)
- 3 2 1 0** 3. Respond positively to ideas and suggestions (C, W)
- 3 2 1 0** 4. Express agreements or neutrality (C, W)
- 3 2 1 0** 5. Demonstrate conflict resolution skills (C, W)
- 3 2 1 0** 6. Express disagreements diplomatically (C, W)

044. Resource Management

- 3 2 1 0** 1. Locate information and select the materials, tools, equipment, or other resources to perform the activities needed to accomplish a specific task (C, W)
- 3 2 1 0** 2. Determine cost, time, and resources needed to complete a task within an industry or occupation (W)
- 3 2 1 0** 3. Explain the differences between setting goals and managing money (M, W)
- 3 2 1 0** 4. Identify fixed and flexible expenses (M, W)

045. Time Management

- 3 2 1 0** 1. Set priorities or the order in which several tasks will be accomplished (W)
- 3 2 1 0** 2. Develop strategies to overcome procrastination and meet deadlines (W)
- 3 2 1 0** 3. Create time plan for solving problems (W)
- 3 2 1 0** 4. Demonstrate stress management skills (W)

046. Work Ethics

- 3 2 1 0** 1. Interpret standards workplace policies related to: (C, W)L10A
 - a. Safety
 - b. Personal hygiene
 - c. Personal discipline
 - d. Substance abuse
 - e. Employee theft
 - f. Sexual harassment
 - g. Causes for termination/legal action
- 3 2 1 0** 2. Apply employee rules, regulations, and policies (W) L8A
- 3 2 1 0** 3. Understand and value effective work ethic, attitudes, and behavior (W)L8A
- 3 2 1 0** 4. Compare and complete various examples of job applications (C, W)L10A
- 3 2 1 0** 5. Maintain an openness to lifelong learning (W)L10C
- 3 2 1 0** 6. Create a portfolio or other means that display academic and technical skills.L10C

047. Career Planning

- 3 2 1 0** 1. Access and use information to develop educational and career option (W) L10B
- 3 2 1 0** 2. Participate in career exploration activities (W)L10A
- 3 2 1 0** 3. Apply self-assessment skills to the career decision-making process (W)L10B
- 3 2 1 0** 4. Recognize potential impact of career choice on family and personal life (W)L10C

IV. CAREER PLACEMENT OPPORTUNITIES

048. Agri-Business Management/Marketing/Sales

- 3 2 1 0** 1. Identify career opportunities (W)

- 3 2 1 0** 2. Identify and develop a training plan (C, W)
- 3 2 1 0** 3. Identify and evaluate wages, taxes, and fringe benefits (W)
- 3 2 1 0** 4. Understand and distinguish differences between economic systems (C, W)
- 3 2 1 0** 5. Recognize and develop a business organization plan (W)
- 3 2 1 0** 6. Develop person organizational plan (W)
- 3 2 1 0** 7. Recognize and distinguish different sale procedures (W)
- 3 2 1 0** 8. Identify and understand different marketing strategies (W)
- 3 2 1 0** 9. Understand concepts of customer credit/loans (W)
- 3 2 1 0** 10. Understand storage and movement of goods (W)
- 3 2 1 0** 11. Understand and utilize different promotion and advertisement strategies (W)
- 3 2 1 0** 12. Discuss marketing strategies. (W)
- 3 2 1 0** 13. Participate in positive customer relationships. (W)
- 3 2 1 0** 14. Explore various advertising methods. (W)
- 3 2 1 0** 15. Participate in Agribusiness Management and or Job Interview CDE (C, W)

049. Livestock Industry/Marketing

- 3 2 1 0** 1. Identify career opportunities (W)
- 3 2 1 0** 2. Identify and utilize strategies to improve herd health and production (W)
- 3 2 1 0** 3. Understand differences in marketing strategies (W)
- 3 2 1 0** 4. Identify and distinguish livestock illnesses and deficiencies (W)
- 3 2 1 0** 5. Identify and determine nutritional requirements for livestock (W)
- 3 2 1 0** 6. Calculate feed rations for peak livestock production (M,W)
- 3 2 1 0** 7. Utilize livestock equipment and facilities.(W)
- 3 2 1 0** 8. Select appropriate reproduction livestock.(W)
- 3 2 1 0** 9. Assist in estrus synchronization. (W)
- 3 2 1 0** 10. Perform breeding soundness exam. (W)
- 3 2 1 0** 11. Explain current livestock trends and issues. (W)
- 3 2 1 0** 12. Participate in Livestock, Dairy Cattle, and/or Horse Judging CDE (C W)

C050. Veterinary Science

- 3 2 1 0 1. Identify career opportunities (W)
- 3 2 1 0 2. Distinguish special care differences between livestock and small animals (W)
- 3 2 1 0 3. Identify basic illness and deficiencies with livestock and/or small animals (W)
- 3 2 1 0 4. Practice sanitation and cleanliness in vet office (W)
- 3 2 1 0 5. Identify educational requirement in becoming a licensed vet (W)
- 3 2 1 0 6. Perform routine vaccinations on large and small animals.(W)
- 3 2 1 0 7. Assist in measuring and administration of drugs.(W)
- 3 2 1 0 8. Observe and assist with surgery. (W)
- 3 2 1 0 9. Update medical records and clientele files. (W)
- 3 2 1 0 10. Assist with medical testing.
- 3 2 1 0 11. Utilize most current technology and equipment necessary for medical practice. (W)

051. Agricultural Mechanics

- 3 2 1 0 1. Identify career opportunities (W)
- 3 2 1 0 2. Identify and follow safety practices (W)
- 3 2 1 0 3. Understand principles of 2 and 4 stroke engines (W)
- 3 2 1 0 4. Identify engine parts and functions (W)
- 3 2 1 0 5. Understand electrical, fuel, lubrication, and cooling systems in agricultural machinery (W)
- 3 2 1 0 6. Perform basic maintenance on agricultural machinery (W)
- 3 2 1 0 7. Read, interpret, and utilize operating and repair manuals (C, W)
- 3 2 1 0 8. Identify and distinguish tools needed to perform certain jobs (W)
- 3 2 1 0 9. Identify educational requirement (W)
- 3 2 1 0 10. Perform minor repairs on farm machinery and implements (W)
- 3 2 1 0 11. Diagnose engine problems. (W)
- 3 2 1 0 12. Assist in rebuilding and or repairing engines.(W)
- 3 2 1 0 11. Participate in Ag Mechanics CDE (M, W)

E053. Metal Fabrication

- 3 2 1 0 1. Identify career opportunities (W)

- 3 2 1 0 2. Identify and follow safety practices (W)
- 3 2 1 0 3. Perform welds with Arc, MIG, and TIG welders (W)
- 3 2 1 0 4. Perform cuts and welds with Oxy-acetylene units (W)
- 3 2 1 0 5. Perform cuts with plasma-arc machine (W)
- 3 2 1 0 6. Perform bends with metal break (W)
- 3 2 1 0 7. Perform cuts, punch holes, and shear metal with ironworker (W)
- 3 2 1 0 8. Properly set up equipment for certain tasks (W)
- 3 2 1 0 9. Identify and distinguish tools needed to perform certain jobs (W)
- 3 2 1 0 8. Read, interpret, and utilize blueprints (W)
- 3 2 1 0 9. Design and draw a set a blueprints (W)
- 3 2 1 0 10. Perform repairs on implements (W)

053. Meat Fabrication

- 3 2 1 0 1. Identify career opportunities
- 3 2 1 0 2. Recognize and cut wholesale, primal, and retails cuts from beef, pork, and/or lamb (W)
- 3 2 1 0 3. Determine yield and quality grades of beef (M, W)
- 3 2 1 0 4. Practice safety and sanitation practices (W)
- 3 2 1 0 5. Perform cuts with meat band-saw and cutter (W)
- 3 2 1 0 6. Operate meat grinder (W)
- 3 2 1 0 7. Package and market meat products (W)
- 3 2 1 0 8. Perform pre-mortem and post-mortem inspections (W)
- 3 2 1 0 9. Identify educational requirements (W)
- 3 2 1 0 10. Participate in Meats Judging CDE (M, W)

054. Agricultural Journalism

- 3 2 1 0 1. Identify career opportunities (W)
- 3 2 1 0 2. Perform proper communication techniques (grammar, editing, and writing) (C, W)
- 3 2 1 0 3. Demonstrate and perform proper interview techniques (C, W)
- 3 2 1 0 4. Develop and utilize inter-personal and communication skills (C, W)
- 3 2 1 0 5. Identify educational requirements (W)
- 3 2 1 0 6. Assist with the chapter newsletter. (C,W)
- 3 2 1 0 7. Prepare a FFA week layout for all local newspapers. (C,W)
- 3 2 1 0 8. Participate in Ag Issues CDE (W)

055. Floriculture/Nursery Landscape

- 3 2 1 0 1. Identify career opportunities (W)
- 3 2 1 0 2. Identify and understand soil/water nutrients and requirements (W)
- 3 2 1 0 3. Read, understand, and utilize landscaping blueprints (C, W)
- 3 2 1 0 4. Design a set of landscaping blueprints (C, W)
- 3 2 1 0 5. Perform transplanting (W)
- 3 2 1 0 6. Identify managing and marketing techniques/strategies with operating a greenhouse (W)
- 3 2 1 0 7. Operate landscaping equipment (W)
- 3 2 1 0 8. Identify educational requirements (W)
- 3 2 1 0 9. Participate in Floriculture and/or Nursery Landscape CDE (W)

056. Agronomy/Crops

- 3 2 1 0 1. Identify common Kansas crops and weeds.(W)
- 3 2 1 0 2. Perform conservation tillage.(W)
- 3 2 1 0 3. Calculate fertilizer applications(W)
- 3 2 1 0 4. Calculate seeding rates(W)
- 3 2 1 0 5. Harvest crops. (W)
- 3 2 1 0 6. Select and apply herbicides and pesticides. (W)
- 3 2 1 0 7. Perform soil tests. (W)
- 3 2 1 0 8. Identify crop growth problems and disease.
- 3 2 1 0 9. Utilize irrigation systems on row crops.(W)
- 3 2 1 0 10. Participate in Crops and/or Land CDE.

3	Mastery of Subject Matter
2	Limited Mastery of Subject Matter
1	Non Mastery of Subject Matter
0	No Exposure to Subject Matter

M	Math Competency
E	Communication Competency
S	Science Competency
C	Career Development Skill
L	Laboratory Based Activity

Enrollement Date __/__/__	Completion Date __/__/__	Hours Completed ____
I Certify that the student received training in the areas indicated		
Student Signature _____		Date __/__/__
Instructor Signature _____		Date __/__/__

3	2	1	0	1	Explore career opportunities in the Animal Health industry	C	3	2	1	0
3	2	1	0	2	Determine education requirements for those careers	C	3	2	1	0
3	2	1	0	B	Anatomy of Animals		3	2	1	0
3	2	1	0	1	Identify and describe the surface anatomy	S	3	2	1	0
3	2	1	0	2	ID major organs of the thoracic & abdominal	S	3	2	1	0
3	2	1	0	C	Cells and Tissue		3	2	1	0
3	2	1	0	1	Name and identify major parts of cells	S	3	2	1	0
3	2	1	0	2	Define osmosis and diffusion through cell membrane	S	3	2	1	0
3	2	1	0	3	Distinguish between cells, tissues, and organs	S	3	2	1	0
3	2	1	0	4	Define and distinguish between mitosis and meiosis	S	3	2	1	0
3	2	1	0	D	Integumentary System		3	2	1	0
3	2	1	0	1	List the functions of skin	S	3	2	1	0
3	2	1	0	2	Diagram the structure of the skin	S	3	2	1	0
3	2	1	0	3	Explain the use of skin by society		3	2	1	0
3	2	1	0		wool, leather, feathers, by products		3	2	1	0
3	2	1	0	E	Skeletal System		3	2	1	0
3	2	1	0	1	Describe the functions of the skeletal system	S	3	2	1	0
3	2	1	0	2	Describe the development of bones and cartilage	S	3	2	1	0
3	2	1	0	3	Describe the process of skeletal maturation	S	3	2	1	0
3	2	1	0	4	Describe how to determine animal maturity		3	2	1	0
3	2	1	0	5	ID & describe skeletal defects in various species	S	3	2	1	0
3	2	1	0	F	Circulatory and Respiratory system		3	2	1	0
3	2	1	0	1	Describe the functions of the circulatory system	S	3	2	1	0
3	2	1	0	2	ID parts and diagram blood flow through the heart	S	3	2	1	0
3	2	1	0	3	Explain how blood is oxygenated & roles of	S	3	2	1	0
3	2	1	0		arteries, veins, and capillaries	S	3	2	1	0
3	2	1	0	4	Know the composition of blood	S	3	2	1	0
3	2	1	0	5	Describe the functions of the respiratory system	S	3	2	1	0
3	2	1	0	6	ID major organs of the respiratory system	S	3	2	1	0
3	2	1	0	7	List common diseases of the circ & respir. Systems	S	3	2	1	0
3	2	1	0	G	Muscular System		3	2	1	0
3	2	1	0	1	Describe types of muscle (skeletal, cartial, smooth)	S	3	2	1	0
3	2	1	0	2	Describe the functions of the three types of muscle	S	3	2	1	0
3	2	1	0	3	Diagram how muscles are attached to the skeleton	SL	3	2	1	0

- 1 Explain mechanical & chemical digestive process of ruminant and monogastrics; including horses and chickens
- 2 Describe assimilation and absorption
- 3 Define metabolism
- 4 Identify organs of digestive system
- 5 Identify the role of accessory organs

1. Identify the anatomy of the male and female reproductive systems.
2. Explain functions of the male and female systems.
3. Describe the female reproductive cycle.
4. List the reproductive hormones and function in the female.
5. List the reproductive hormones and functions in the male.
6. Describe fertilization & stages and steps of pregnancy.
7. Describe the development of a fetus.
8. Demonstrate the procedures of artificial insemination.
9. Discuss the technique of embryo transfer including:
 - superovulation,
 - synchronization of donor and recipient

- 11 Describe methods used in pregnancy diagnosis.
- 12 Outline complications and care during parturition.
- 13 Explain how cycling time can be increased in animal p
- 14 Describe the development of the sperm and ovum.
- 15 List health problems with the reproductive system

- 1 Explain function of the mammary system
- 2 Describe the development of the mammary system
- 3 Illustrate the structure of the mammary system
- 4 Describe the endocrinology of lactation.

	3	2	1	0	Demonstrate proper methods of	
	3	2	1	0	animal restraint	L
S	3	2	1	0	determining animal temperature	L
S	3	2	1	0	giving injections	L
S	3	2	1	0	obtaining fecal samples	L
S	3	2	1	0	Describe normal appearance & behavior	L

$$3 \quad 2 \quad 1 \quad 0$$

3	2	1	0	L	FFA & SAE				O	Work Ethics		3	2	1	0		
3	2	1	0		1 Evaluate and compare different types of SAE		3	2	1	0	1 Interpret workplace policies related to	C	3	2	1	0	
3	2	1	0		2 Select SAE best suited to individual needs based on		3	2	1	0	Safety	C	3	2	1	0	
3	2	1	0		Interest, skill abilities and opportunities		3	2	1	0	Personal Hygiene	C	3	2	1	0	
3	2	1	0		3 Plan and implement individual SAE		3	2	1	0	Personal leave & absence	C	3	2	1	0	
3	2	1	0		4 Use skills learned in class to enhance SAE		3	2	1	0	Substance abuse	C	3	2	1	0	
3	2	1	0		5 Apply skills in agricultural CDE		3	2	1	0	Sexual harassment	C	3	2	1	0	
3	2	1	0		6 Record entries in and evaluate SAE record book		3	2	1	0	2 Apply rules, regulations & policies	C	3	2	1	0	
3	2	1	0		7 Income, expenses, cash flow, inventories & depreciation		3	2	1	0	Punctuality and dependability	C	3	2	1	0	
3	2	1	0		8 Analyze and revise SAE to maximize profit		3	2	1	0	Responsibility for position	C	3	2	1	0	
3	2	1	0		9 Examine goals and future plans for SAE		3	2	1	0	Accuracy	C	3	2	1	0	
3	2	1	0		10 Use Record book to complete application for		3	2	1	0	P	Listening Skills	C	3	2	1	0
3	2	1	0		Greenhand, chapter or state FFA degree		3	2	1	0	1 Follow oral instructions	C	3	2	1	0	
3	2	1	0		District & State Proficiency awards		3	2	1	0	2 Distinguish fact, opinion, and inference	C	3	2	1	0	
3	2	1	0	M	Time Management		3	2	1	0	3 Interpret non verbal cues	C	3	2	1	0	
3	2	1	0		1 Define the following terminology	C	3	2	1	0	4 Analyze speaker's point of view	C	3	2	1	0	
3	2	1	0		Time Management	C	3	2	1	0	Q	Computer Skills	C	3	2	1	0
3	2	1	0		Procrastination	C	3	2	1	0	1 Compose, organize & edit information w/ computer	C	3	2	1	0	
3	2	1	0		Priority	C	3	2	1	0	2 Use presentation software	C	3	2	1	0	
3	2	1	0		consequences	C	3	2	1	0	3 Use industry specific software	C	3	2	1	0	
3	2	1	0		Incentive	C	3	2	1	0	4 Access & use online services	C	3	2	1	0	
3	2	1	0		Dovetail tasks	C	3	2	1	0	5 Send and receive email, voicemail & fax	C	3	2	1	0	
3	2	1	0		2 List Benefits of setting goals	C	3	2	1	0	6 Use software to store, sort, query & receive data	C	3	2	1	0	
3	2	1	0		3 List short and long-term goals	C	3	2	1	0	R	Writing	C	3	2	1	0
3	2	1	0		4 Determine priorities in personal life	C	3	2	1	0	1 Use correct language, organization and format	C	3	2	1	0	
3	2	1	0		5 List influences on use of time	C	3	2	1	0	2 Check, edit, and revise for correct information	C	3	2	1	0	
3	2	1	0		6 Identify time traps	C	3	2	1	0	3 Create & present tech data in charts & graphs	C	3	2	1	0	
3	2	1	0		7 Identify personal "time wasters"	C	3	2	1	0	4 Maintain records, logs, lab notebooks	C	3	2	1	0	
3	2	1	0		8 State principles of efficient time management	C	3	2	1	0	5 Use style manuals or software for documentation	C	3	2	1	0	
3	2	1	0		9 Identify reasons for procrastination	C	3	2	1	0			3	2	1	0	
3	2	1	0		10 List ways to overcome procrastination	C	3	2	1	0			3	2	1	0	
3	2	1	0		11 Develop habits that save time	C	3	2	1	0			3	2	1	0	
3	2	1	0		12 Identify effective study habits	C	3	2	1	0			3	2	1	0	
3	2	1	0	N	Teamwork Skills	C	3	2	1	0			3	2	1	0	
3	2	1	0		1 Participate in team tasks	C	3	2	1	0			3	2	1	0	
3	2	1	0		2 establish team goals	C	3	2	1	0			3	2	1	0	
3	2	1	0		3 establish team standards	C	3	2	1	0			3	2	1	0	
3	2	1	0		4 receive and give information	C	3	2	1	0			3	2	1	0	
3	2	1	0		5 process information	C	3	2	1	0			3	2	1	0	
3	2	1	0		6 plan for action	C	3	2	1	0			3	2	1	0	
3	2	1	0		7 complete team task on time	C	3	2	1	0			3	2	1	0	
3	2	1	0				3	2	1	0			3	2	1	0	
							3	2	1	0							

Advanced Animal Science -18103

Kansas Agricultural Education

Hours Completed _____ Competencies Completed _____
Verification Signatures:

Student: _____ Date: _____

Instructor: _____ Date: _____

Name: _____

Instructor: _____ School Year: _____

Key to Integrated Competencies

(CD)- Career Development

(L)- Leadership

(E) - Experienced Based

(LK) - LifeKnowledge Lessons

(LA) – Language Arts

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Animal Origin AS.01.01.

3 2 1 0 1. Evaluate and describe characteristics of animals that developed in response to the animals' environment and led to their domestication.

3 2 1 0 2. Outline the development of the animal industry and the resulting products, services and careers.

Classify Animals AS.02.01.

3 2 1 0 1. Explain how animals are classified using Linnaeus's taxonomical classification system.

3 2 1 0 2. Compare and contrast the hierarchical classification of the major agricultural animal species.

3 2 1 0 3. Appraise and evaluate the economic value of animals for various applications in the agriculture industry.

Comparative Anatomy & Physiology AS.02.02.

3 2 1 0 1. Compare and contrast animal cells, tissues, organs and body systems.

3 2 1 0 2. Explain how the components and systems of animal anatomy and physiology relate to the production and use of animals.

3 2 1 0 3. Describe the functions of animal cell structures.

3 2 1 0 4. Detail the processes of meiosis and mitosis in animal growth, development, health and reproduction.

3 2 1 0 5. Explain the application of the processes of meiosis and mitosis to animal growth, development, health and reproduction.

3 2 1 0 6. Explain the relationship of animal tissues to growth, performance and health.

3 2 1 0 7. Explain the importance and uses made of animal tissues in the agriculture industry.

3 2 1 0 8. Compare and contrast organ types and functions among animal species.

3 2 1 0 9. Relate the importance of animals' organs to the health, growth and reproduction of animals.

3 2 1 0 10. Compare and contrast body systems and system adaptations between animal species.

3 2 1 0 11. Explain the impact of animal body systems on performance, health, growth and reproduction.

Selecting Animals AS.02.03.

3 2 1 0 1. Compare and contrast desirable anatomical and physiological characteristics of animals within and between species.

3 2 1 0 2. Evaluate and select animals to maximize performance based on anatomical and physiological characteristics that affect health, growth and reproduction.

3 2 1 0 3. Assess an animal to determine if it has reached its optimal performance level based on anatomical and physiological characteristics.

Prevention & Treatment of Animals AS.03.01.

3 2 1 0 1. Perform simple health-check evaluations on animals.

3 2 1 0 2. Diagnose illnesses and disorders of animals based on symptoms and problems caused by diseases, parasites and physiological disorders.

3 2 1 0 3. Evaluate preventive measures for controlling and limiting the spread of diseases, parasites and disorders among animals.

3 2 1 0 4. Prepare animals, facilities and equipment for surgical and nonsurgical veterinary treatments and procedures.

3 2 1 0 5. Explain the health risk of zoonotic diseases to humans and their historical significance and future implications.

Biosecurity AS.03.02.

3 2 1 0 1. Discuss procedures at the local, state and national levels to ensure biosecurity of the animal industry.

Formulate Feed Rations AS.04.01.

3 2 1 0 1. Determine the relative nutritional value of feedstuffs by evaluating their general quality and condition.

3 2 1 0 2. Select appropriate feedstuffs for animals based on factors such as economics, digestive system and nutritional needs.

3 2 1 0 3. Appraise the adequacy of feed rations using data from the analysis of feedstuffs, animal requirements and performance.

3 2 1 0 4. Formulate animal feeds based on nutritional requirements, using feed ingredients for maximum nutrition and optimal economic production.

Feed Additives & Growth Promotants AS.04.02.

3 2 1 0 1. Discuss how feed additives and growth promotants are administered and the precautions that should be taken.

Male & Female Reproductive Systems AS.05.01.

3 2 1 0 1. Describe the functions of major organs in the male and female reproductive systems.

3 2 1 0 2. Select breeding animals based on characteristics of the reproductive organs.

Breeding Readiness & Soundness AS.05.02.

3 2 1 0 1. Summarize factors that lead to reproductive maturity.

3 2 1 0 2. Evaluate reproductive problems that occur in animals.

Scientific Principles in Breeding AS.05.03

3 2 1 0 1. Explain the advantages of using genetically superior animals in the production of animals and animal products.

3 2 1 0 2. Explain the processes of natural and artificial breeding methods.

3 2 1 0 3. Compare and contrast quantitative breeding value differences between genetically superior animals and animals of average genetic value.

3 2 1 0 4. Select animals based on quantitative breeding values for specific characteristics.

3 2 1 0 5. Explain the processes of major reproductive management practices, including estrous synchronization, superovulation, flushing and embryo transfer.

3 2 1 0 6. Explain the materials, methods and processes of artificial insemination.

Safe Animal Handling AS.06.01.

3 2 1 0 1. Outline safety procedures for working with animals by species.

3 2 1 0 2. Design programs that assure the welfare of animals and prevent abuse or mistreatment.

Animal Product Safety AS.06.02.

3 2 1 0 1. Discuss consumer concerns with animal production practices relative to human health.

3 2 1 0 2. Explain why animal trace-back capability, using individual animal and farm identification systems, is important to producers and consumers.

Design Animal Facilities AS.07.01.

3 2 1 0 1. Critique designs for an animal facility and prescribe alternative layouts and adjustments for the safe and efficient use of the facility.

3 2 1 0 2. Design an animal facility, focusing on animal requirements, efficiency, safety and ease of handling.

3 2 1 0 3. Explain how modern equipment and handling facilities enhance the safe and economic production of animals.

Government Regulations & Standards AS.07.02.

3 2 1 0 1. Evaluate an animal facility to determine if standards have been met.

Reducing Environment Effects AS.08.01.

3 2 1 0 1. Outline methods of reducing the effects of animal agriculture on the environment.

Environment Conditions on Animals AS.08.02.

3 2 1 0 1. Describe the effects of environmental conditions on animal populations and performance.

Natural Resource Management - 18504

Kansas Agricultural Education

Name: _____

Instructor: _____ School Year: _____

Hours Completed _____ Competencies Completed _____
Verification Signatures:

Student: _____ Date: _____

Instructor: _____ Date: _____

Key to Integrated Competencies

(CD)- Career Development

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Our Natural Resources NRS.01.01.

3 2 1 0 1. Differentiate between renewable and nonrenewable natural resources.

3 2 1 0 2. Describe the interdependence of organisms within ecosystem.

Classify Natural Resources NRS.01.02.

3 2 1 0 1. Identify trees and other woody plants.

3 2 1 0 2. Identify herbaceous plants.

3 2 1 0 3. Identify wildlife species.

3 2 1 0 4. Identify aquatic species.

3 2 1 0 5. Identify rock, mineral and soil types.

Safety Plan NRS.02.01.

3 2 1 0 1. Demonstrate safety practices when working in an outdoor environment

3 2 1 0 2. Use appropriate techniques and equipment when working with biohazards.

Cartographic Skills NRS.02.02.

3 2 1 0 1. Locate natural resources using a land survey and geographic coordinate system.

Measure and Survey NRS.02.03

3 2 1 0 1. Discuss the procedures for conducting resource inventories and population studies.

Enhancement Techniques NRS.02.04

3 2 1 0 1. Identify indicators of the biological health of a stream.

3 2 1 0 2. Identify ways in which forest stands may be improved

3 2 1 0 3. Identify methods of wildlife habitat improvement.

3 2 1 0 4. Identify methods of rangeland improvement.

3 2 1 0 5. Identify natural resources management techniques for improving recreation opportunities.

3 2 1 0 6. Identify methods to improve marine and costal natural resources.

Interpret Laws NRS.02.05

3 2 1 0 1. Identify the purposes of laws associated with natural resource systems.

3 2 1 0 2. Identify issues involving mitigation of natural resources.

Ecological Concepts and Principles NRS.02.06

3 2 1 0 1. Diagram biogeochemical cycles and explain the processes.

3 2 1 0 2. Relate the function of watersheds to natural resources.

3 2 1 0 3. Explain stream hydrology and structure, and determine the different classes of streams.

3 2 1 0 4. Identify techniques used in the creation, enhancement and management of riparian zones and riparian buffers.

3 2 1 0 5. Give examples of primary-succession and secondary-succession species in community of organisms.

3 2 1 0 6. Discuss factors that influence population density and population dispersion

3 2 1 0 7. Discuss factors that influence the establishment and spread of invasive species.

3 2 1 0 8. Describe the impact of pollution on natural resources.

3 2 1 0 9. Describe the impact climate has on natural resources.

Natural Resource Products NRS.03.01.

3 2 1 0 1. Determine when to harvest forest products.

3 2 1 0 2. Describe processing of forest products.

3 2 1 0 3. Describe techniques used in the harvesting of wildlife.

3 2 1 0 4. Describe techniques used in the processing of wildlife.

3 2 1 0 5. Describe economically important minerals and ores that are extracted and processed.

3 2 1 0 6. Describe sources of fossil fuels and products made from fossil fuels.

3 2 1 0 7. Describe characteristics of sites that lend themselves to hydroelectric generation.

3 2 1 0 8. Debate an issue related to the recreational use of natural resources.

3 2 1 0 9. Describe techniques used to harvest aquatic species.

3 2 1 0 10. Explain techniques used to process aquatic species.

Manage Fires NRS.04.01

3 2 1 0 1. Describe techniques used to suppress wildfires and manage prescribed fires.

Plant and Wildlife Diseases NRS.04.02

- 3 2 1 0 1. Report the observance of diseases affecting plants to the appropriate authorities.
- 3 2 1 0 2. Report the observances of diseases affecting wildlife to the appropriate authorities.

Insect Infestations NRS.04.03

- 3 2 1 0 1. Report observance of insect pests to the appropriate authorities.

Communicate to the Public NRS.05.01

- 3 2 1 0 1. Design and construct a display that communicates a natural resource topic and discuss the topic in a public forum.

Environmental Resources and Wildlife Science-18501 Kansas Agricultural Education

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Instructor: _____ School Year: _____

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Our Natural Resources NRS.01.01.

- 3 2 1 0 1. Research and debate one or more current issues related to the conservation or preservation of natural resources.
- 3 2 1 0 2. Conduct a field study of an ecosystem, and record and document observations of species interactions.

Classify Natural Resources NRS.01.02.

- 3 2 1 0 1. Conduct a field inventory of trees and other woody plants, and record and document findings.
- 3 2 1 0 2. Conduct a field inventory of herbaceous plants, and record and document findings.
- 3 2 1 0 3. Conduct a field inventory of wildlife species, and record and document findings.
- 3 2 1 0 4. Conduct a field inventory of aquatic species, and record and document findings.
- 3 2 1 0 5. Conduct a field inventory of rock, mineral and soil types, and record and document findings.

Safety Plan NRS.02.01.

- 3 2 1 0 1. Demonstrate appropriate responses to accidents and injuries that occur in an outdoor environment.
- 3 2 1 0 2. Demonstrate appropriate responses for disasters involving biohazardous materials.

Cartographic Skills NRS.02.02.

- 3 2 1 0 1. Employ Global Positioning System and Geographic Information Systems technologies to inventory features in natural resource management.

Measure and Survey NRS.02.03

- 3 2 1 0 1. Conduct resource inventories and population studies to assess resource status.

Enhancement Techniques NRS.02.04

- 3 2 1 0 1. Create and implement a stream enhancement plan.
- 3 2 1 0 2. Formulate a timber stand improvement plan for a forest.
- 3 2 1 0 3. Conduct a survey of a habitat and devise a comprehensive improvement plan.
- 3 2 1 0 4. Evaluate a rangeland and develop a management plan for improvement.
- 3 2 1 0 5. Evaluate the impact of recreational activities on natural resources and create an improvement plan.
- 3 2 1 0 6. Assess marine and coastal natural resources and prepare an improvement plan.

Interpret Laws NRS.02.05

- 3 2 1 0 1. Abide by specific laws pertaining to natural resource systems.
- 3 2 1 0 2. Demonstrate mitigation techniques for natural resources.

Ecological Concepts and Principles NRS.02.06

- 3 2 1 0 1. Determine the human influence on biogeochemical cycles.

- 3 2 1 0 2. Analyze ecosystems functions of a watershed.
- 3 2 1 0 3. Classify and predict the behavior of local streams.
- 3 2 1 0 4. Create, enhance and manage riparian zones and riparian buffers.
- 3 2 1 0 5. Conduct a field study to determine the stages of ecological succession in a community of organisms.
- 3 2 1 0 6. Create and implement a management plan based on a population study for a community of organisms.
- 3 2 1 0 7. Develop and implement a plan to reduce the impact of invasive species on natural resources.
- 3 2 1 0 8. Create and implement a plan to prevent or limit the effects of pollution on natural resources.
- 3 2 1 0 9. Monitor the effects of climate on plants and wildlife.

Natural Resource Products NRS.03.01.

- 3 2 1 0 1. Harvest forest products according to principles of sustainable forest management.
- 3 2 1 0 2. Process forest products.
- 3 2 1 0 3. Formulate a management plan for protecting wildlife from overexploitation.
- 3 2 1 0 4. Process harvested wildlife.
- 3 2 1 0 5. Give examples of methods used to extract and process minerals and ores.
- 3 2 1 0 6. Give examples of methods used to extract and process fossil fuels.

- 3 2 1 0 7. Describe hydroelectric generation techniques and procedures, and prepare a report on the impacts on the impacts of hydroelectric dams on aquatic systems.
- 3 2 1 0 8. Evaluate a natural resources site and recommend opportunities for recreational activities.
- 3 2 1 0 9. Harvest aquatic species according to sustainable management principles.
- 3 2 1 0 10. Process harvest aquatic species.

Manage Fires NRS.04.01

- 3 2 1 0 1. Demonstrate the application of fire application of fire suppression and fire safety techniques.

Plant and Wildlife Diseases NRS.04.02

- 3 2 1 0 1. Explain management techniques used to reduce infection and spread of plant diseases in natural resources.
- 3 2 1 0 2. Explain wildlife disease management techniques.

Insect Infestations NRS.04.03

- 3 2 1 0 1. Describe techniques used to manage pests of natural resources.

Communicate to the Public NRS.05.01

- 3 2 1 0 1. Communicate a natural resource message through the press, radio, television or public appearances.